ANNEX G-1. GEOLOGICAL INVESTIGATIONS NORTH OF THE REDLINE

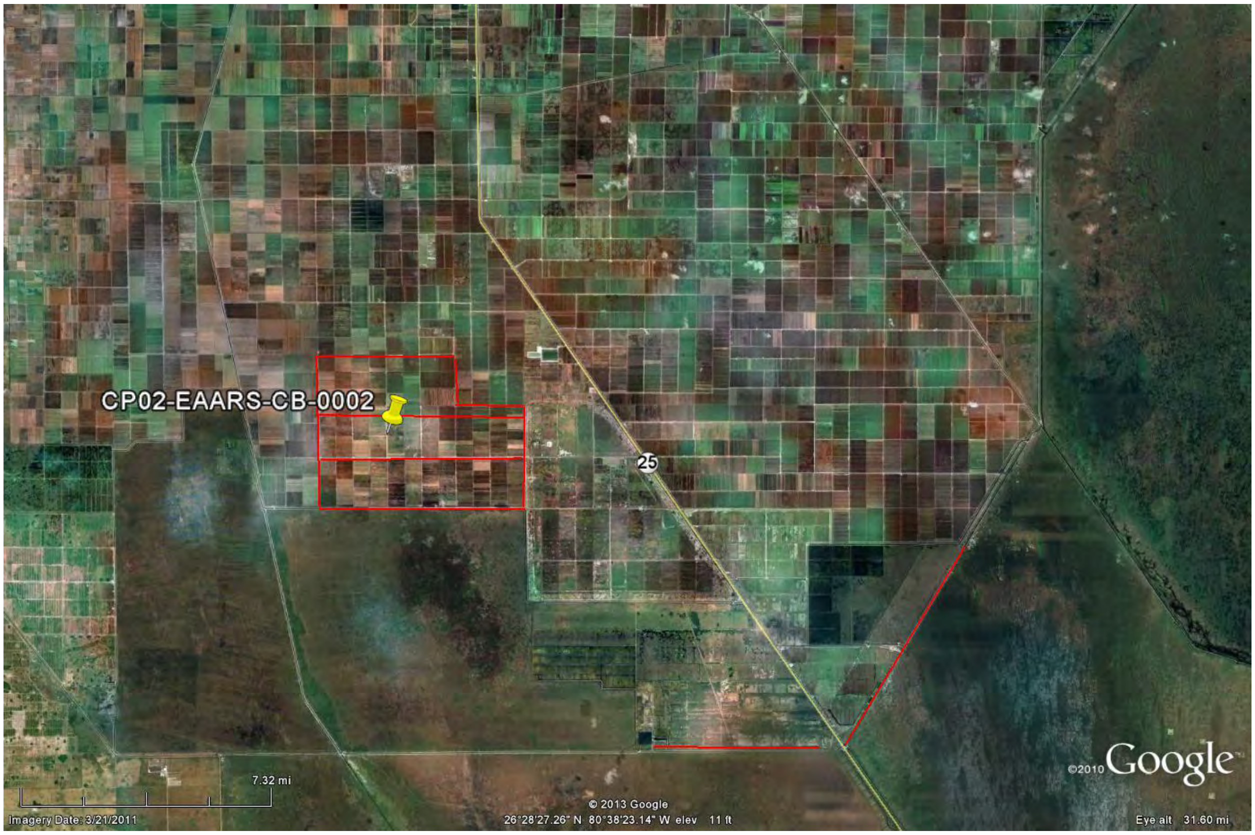

Figure G-1-1. Boring Map of CP02-EAARS-CB-0002

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG

DIVISION: South Atlantic	INSTALLATION: Jacksonville District		SHEET 1 OF 10 SHEETS
1. PROJECT: CERP Everglades Agricultural Area Reservoirs Phase 1, Effort 1, Compartment A	9. SIZE AND TYPE OF BIT: See Remarks		
	10. COORDINATE SYSTEM/DATUM: State Plane, FLE	HORIZONTAL: NAD83	VERTICAL: NAVD88
2. BORING DESIGNATION: CP02-EAARS-CB-0002	LOCATION COORDINATES: X = 736,775 Y = 775,528	11. MANUFACTURER'S DESIGNATION OF DRILL: CME-55	☐ AUTO HAMMER ☒ MANUAL HAMMER
3. DRILLING AGENCY: Ardaman & Associates, Inc.	CONTRACTOR FILE NO.: 02-042	12. TOTAL SAMPLES — DISTURBED: 118	UNDISTURBED (UD): 0
4. NAME OF DRILLER: M. Gulick		13. TOTAL NUMBER CORE BOXES: 5	
5. DIRECTION OF BORING: ☒ VERTICAL ☐ INCLINED	DEG. FROM VERTICAL / BEARING	14. ELEVATION GROUND WATER: Not Determined	
		15. DATE BORING — STARTED: 08-13-02	COMPLETED: 09-03-02
6. THICKNESS OF OVERBURDEN: 5.4 Ft.		16. ELEVATION TOP OF BORING: 12.0 Ft.	
7. DEPTH DRILLED INTO ROCK: 13.5 Ft.		17. TOTAL RECOVERY FOR BORING: 80 %	
8. TOTAL DEPTH OF BORING: 180.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR: H. Snyder, Civil Engineer	

ELEV.	DEPTH	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/0.5 FT.	N-VALUE
12.0	0.0	FILL, gravelly, mixture of fine gravel size limestone, fine to coarse grained limestone sand, and silt, dry, light gray	13	1		12.0 SPT Sampler 10.4	32 / 32 / 8	40
			40	2		SPT Sampler 9.0	4 / 6 / 6	12
9.0	3.0							
8.8	3.2	SAND, silty, mostly fine-grained, some silt, dry, dark brown (SM)						
		Limestone, hard, slightly weathered, medium-grained, porous to pitted, light gray-green	47	3		SPT Sampler 7.4	1 / 2 / 4	6
			100	4		SPT Sampler 6.6	16 / 50/0.4'	
5.0	7.0	Limestone, moderately hard	50	6 BOX 1	RQD 28	4 x 5-1/2" Diamond Impregnated Bit DT = 80 mins HP = 100 psi 2.0		
			100	7	RQD 0	4 x 5-1/2" Diamond Impregnated Bit 9 mins, 100 psi 0.9		
			80	8		SPT Sampler -0.6	4 / 4 / 29	33
			50	9		-1.0 SPT Sampler	50/0.4'	
			45	BOX 1	RQD 39	4 x 5-1/2" Diamond Impregnated Bit DT = 23 mins HP = 100 psi		

Slightly Weathered

0 5 10 15

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(Continued)

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 2 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-4.0	16.0		At El. -3.0 Ft., vuggy	45	BOX 1 10	RQD 39	4 x 5-1/2" Diamond Impregnated Bit DT = 23 mins HP = 100 psi -4.0		
			Limestone, hard, unweathered, fine-grained, vuggy, trace of shell, gray	NR	11		-4.2 SPT Sampler	50/0.2'	
		Unweathered		84	BOX 1 12	RQD 50	4 x 5-1/2" Diamond Impregnated Bit DT = 15 mins HP = 100 psi -8.0		
				70	BOX 2 13	RQD 40	4 x 5-1/2" Diamond Impregnated Bit 8 mins, 100 psi -9.0		
			At El. -9.0 Ft., little shell	33	14		SPT Sampler -10.6	6 7 8	15
-12.0	24.0		At El. -10.6 Ft., trace silt	47	15		SPT Sampler -12.0	7 9 10	19
			SAND, poorly-graded with silt, some angular fine-grained quartz, some fine-grained limestone, little angular shell, trace phosphate, light brown (SP-SM)	47	16		SPT Sampler -13.6	7 10 11	21
-15.0	27.0			47	17		SPT Sampler -15.0	11 10 11	21
			SAND, silty, mostly fine-grained quartz, trace angular fine-grained shell, trace clay, trace phosphate, light gray (SM)	73	18		SPT Sampler -16.6	8 9 9	18
			At El. -17.0 Ft., little clay	87	19		SPT Sampler -18.0	7 6 6	12
-19.6	31.5			87	20		SPT Sampler -19.6	8 5 5	10
			SAND, poorly-graded with silt, mostly fine-grained quartz, little shell, few silt, light brown (SP-SM)	73	21		SPT Sampler -21.0	8 8 12	20
-22.6	34.5			73	22		SPT Sampler -22.6	10 11 13	24
			SAND, poorly-graded, mostly fine to	75	23		SPT Sampler	11	

15 20 25 30 35

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JUN 02

(Continued)

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 3 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.			

ELEV.	DEPTH	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		medium-grained quartz, some angular fine to medium-grained shell, few phosphate, trace silt, light brown to light gray (SP)	75	23		-24.0 SPT Sampler	11 / 11	22
		At El. -24.0 Ft., trace shell, trace of shell	93	24		-25.6 SPT Sampler	6 / 7 / 8	15
			87	25		-27.0 SPT Sampler	3 / 5 / 5	10
			67	26		-28.6 SPT Sampler	4 / 6 / 7	13
			73	27		-30.0 SPT Sampler	5 / 5 / 7	12
		At El. -30.0 Ft., trace fine gravel-sized shell	60	28		-31.6 SPT Sampler	5 / 6 / 7	13
			93	29		-33.0 SPT Sampler	7 / 4 / 7	11
			80	30		-34.6 SPT Sampler	10 / 8 / 8	16
		At El. -34.6 Ft., trace fine gravel-sized limestone	93	31		-36.0 SPT Sampler	10 / 8 / 11	19
-36.6	48.5	Limestone, hard, fine-grained, trace of silt, few fine grained sand, trace of clay, gray	93	32		-37.6 SPT Sampler	9 / 29 / 34	63
			53	33		-39.0 SPT Sampler	14 / 6 / 9	15
-39.0	51.0	SAND, poorly-graded, mostly fine-grained shell, trace coarse gravel-sized phosphate, trace clay, gray (SP)	80	34		-40.6 SPT Sampler	4 / 5 / 6	11
		From El. -40.6 to -45.0 Ft., mostly medium to coarse-grained shell, trace fine gravel-sized shell, trace clay, light brown	73	35		-42.0 SPT Sampler	11 / 19 / 26	45
			87	36		SPT Sampler	17 / 20	

Depth scale: 35, 40, 45, 50, 55

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Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 4 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				87	36		-43.6 SPT Sampler	19	39
-45.0	57.0			87	37		SPT Sampler -45.0	15 19 22	41
			SAND, poorly-graded with clay, mostly medium-grained sand, little clay, little angular shell, trace fine gravel-sized shell, gray (SP-SC)	100	38		SPT Sampler -46.6	12 16 13	29
			At El. -47.0 Ft., few shell, trace clay	60	39		SPT Sampler -48.0	14 17 19	36
-49.6	61.5			93	40		SPT Sampler -49.6	10 14 14	28
			SAND, clayey, mostly fine to medium-grained sand, some clay, little fine gravel-sized shell, gray (SC)	87	41		SPT Sampler -51.0	10 19 31	50
				93	42		SPT Sampler -52.6	10 13 12	25
			At El. -52.6 Ft., some shell, trace clay, lens of clay	73	43		SPT Sampler -54.0	13 13 20	33
-55.6	67.5			100	44		SPT Sampler -55.6	10 11 11	22
			SAND, poorly-graded with clay, mostly shell (SP-SC)	67	45		SPT Sampler -57.0	10 12 16	28
				93	46		SPT Sampler -58.6	15 14 12	26
				53	47		SPT Sampler -60.0	11 12 16	28
				67	48		SPT Sampler -61.6	18 14 19	33
			At El. -61.6 Ft., mostly shell	67	49		SPT Sampler -63.0	6 12 15	27

Depth scale: 55, 60, 65, 70, 75

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JUN 02

(Continued)

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 5 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-63.8	75.7			93	50		SPT Sampler -64.6	20 18 18	36
			Limestone, fine-grained, trace of clay, trace of phosphate, gray	53	51		SPT Sampler -66.0	14 16 17	33
-66.0	78.0		SAND, poorly-graded, mostly fine to medium-grained quartz, trace sandstone, trace shell, light gray (SP)	67	52		SPT Sampler -67.6	10 40 45	85
				67	53		SPT Sampler -69.0	26 32 49	81
				100	54		SPT Sampler -70.6	36 65 57	122
				87	55		SPT Sampler -72.0	10 14 20	34
				93	56		SPT Sampler -73.6	14 28 29	57
				53	57		SPT Sampler -75.0	14 17	
				87	59		SPT Sampler -76.6	8 18 29	47
				87	60		SPT Sampler -78.0	24 34 42	76
				73	61		SPT Sampler -79.6	9 18 20	38
			From El. -79.6 to -80.6 Ft., mostly coarse-grained quartz, trace phosphate, trace shell, trace sandstone, light gray	93	62		SPT Sampler -81.0	4 10 6	16
-80.6	92.5		SAND, clayey, mostly medium to coarse-grained sand, some clay, trace phosphate, trace shell, gray (SC) At El. -82.0 Ft., trace sand	100	63		SPT Sampler -82.6	5 7 12	19
			At El. -82.6 Ft., little shell, little limestone	100	64		SPT Sampler	3	

Depth scale: 75, 80, 85, 90, 95

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JUN 02

(Continued)

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Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 6 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			At El. -84.0 Ft., trace sand	100	64		SPT Sampler -84.0	9 / 7	16
				100	65		SPT Sampler -85.6	10 / 8 / 9	17
			At El. -86.0 Ft., trace limestone	87	66		SPT Sampler -87.0	18 / 21 / 26	47
-88.6	100.5		At El. -87.0 Ft., some shell	67	67		SPT Sampler -88.6	12 / 22 / 29	51
-90.0	102.0		SAND, clayey, mostly fine to coarse-grained sand, some clay, few shell, trace phosphate, gray (SC)	100	68		SPT Sampler -90.0	14 / 9 / 14	23
			Sandstone, fine-grained, few shell, trace of clay, trace of phosphate, gray	67	69		SPT Sampler -91.6	5 / 16 / 20	36
				100	70		SPT Sampler -93.0	17 / 16 / 17	33
				87	71		SPT Sampler -94.6	9 / 17 / 19	36
				67	72		SPT Sampler -96.0	3 / 19 / 30	49
				73	73		SPT Sampler -97.6	19 / 19 / 23	42
			At El. -98.0 Ft., few clay	93	74		SPT Sampler -99.0	24 / 21 / 22	43
				93	75		SPT Sampler -100.6	22 / 24 / 19	43
				93	76		SPT Sampler -102.0	18 / 15 / 20	35
				87	77		SPT Sampler	14 / 16	

Depth scale: 95, 100, 105, 110, 115

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JUN 02

(Continued)

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)

INSTALLATION Jacksonville District			**SHEET** 7 **OF** 10 **SHEETS**
PROJECT CERP Everglades Agricultural Area Reservoirs	**COORDINATE SYSTEM/DATUM** State Plane, FLE	**HORIZONTAL** NAD83	**VERTICAL** NAVD88
LOCATION COORDINATES X = 736,775 Y = 775,528	**ELEVATION TOP OF BORING** 12.0 Ft		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
	115			87	77		-103.6 SPT Sampler	17	33
				87	78		-105.0 SPT Sampler	15 17 14	31
				93	79		-106.6 SPT Sampler	12 10 11	21
	120			100	80		-108.0 SPT Sampler	13 17 16	33
				93	81		-109.6 SPT Sampler	12 14 18	32
				87	82		-111.0 SPT Sampler	17 22 17	39
				93	83		-112.6 SPT Sampler	12 16 16	32
	125			73	84		-114.0 SPT Sampler	14 22 19	41
				87	85		-115.6 SPT Sampler	15 14 13	27
				93	86		-117.0 SPT Sampler	14 13 13	26
	130			73	87		-118.6 SPT Sampler	13 14 10	24
				87	88		-120.0 SPT Sampler	9 10 15	25
				80	89		-121.6 SPT Sampler	26 15 16	31
	135			87	90		-123.0 SPT Sampler	23 24 18	42

(Continued)

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Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 6 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				60	91		SPT Sampler -124.6	9 / 10 / 11	21
				93	92		SPT Sampler -126.0	17 / 24 / 19	43
				80	93		SPT Sampler -127.6	25 / 28 / 20	48
				73	94		SPT Sampler -129.0	14 / 18 / 19	37
				87	95		SPT Sampler -130.6	12 / 16 / 39	55
-131.0	143.0		SAND, poorly-graded, mostly fine to medium-grained quartz, trace phosphate, light gray (SP)	100	96		SPT Sampler -132.0	31 / 37 / 24	61
				100	97		SPT Sampler -133.6	17 / 21 / 17	38
				100	98		SPT Sampler -135.0	14 / 16 / 20	36
				100	99		SPT Sampler -136.6	12 / 25 / 27	52
				100	100		SPT Sampler -138.0	12 / 18 / 18	36
				93	101		SPT Sampler -139.6	11 / 16 / 18	34
				100	102		SPT Sampler -141.0	10 / 16 / 22	36
-142.6	154.5			67	103		SPT Sampler -142.6	15 / 20 / 25	51
			Sandstone, fine-grained, some quartz sand.	80	104		SPT Sampler	18	

Depth scale: 135, 140, 145, 150, 155

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JUN 02

(Continued)

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District		SHEET 9 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft.		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			few clay, trace shell, trace phosphate, gray At El. -143.0 Ft., few shell	80	104		-144.0 SPT Sampler	20 19	39
				93	105		-145.6 SPT Sampler	25 22 24	46
			At El. -145.6 Ft., trace clay	100	106		-147.0 SPT Sampler	9 17 41	58
				73	107		-148.6 SPT Sampler	16 20 20	40
				80	108		-150.0 SPT Sampler	15 17 19	36
				80	109		-151.6 SPT Sampler	30 20 18	38
				73	110		-153.0 SPT Sampler	18 16 21	37
				80	111		-154.6 SPT Sampler	14 16 18	34
				80	112		-156.0 SPT Sampler	10 18 19	37
				73	113		-157.6 SPT Sampler	6 17 14	31
-159.0	171.0			100	114		-159.0 SPT Sampler	14 14 16	30
-161.0	173.0		SAND, poorly-graded, mostly fine to medium-grained quartz, trace fine gravel-sized sandstone, trace phosphate, light gray (SP)	100	115		-160.6 SPT Sampler	15 24 19	43
			Sandstone, medium-grained, some quartz sand, few clay, few shell, trace of phosphate gray	100	116		-162.0 SPT Sampler	14 17 11	28
				87	117		SPT Sampler	24 24	

Depth scale: 155, 160, 165, 170, 175

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JUN 02

(Continued)

Boring Designation CP02-EAARS-CB-0002

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 10 OF 10 SHEETS
PROJECT CERP Everglades Agricultural Area Reservoirs	COORDINATE SYSTEM/DATUM State Plane, FLE	HORIZONTAL NAD83	VERTICAL NAVD88	
LOCATION COORDINATES X = 736,775 Y = 775,528	ELEVATION TOP OF BORING 12.0 Ft			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				87	117		-163.6 SPT Sampler	18	42
				67	118		SPT Sampler -165.0	16 16 18	34
				100	119		SPT Sampler -166.6	17 18 19	37
-168.0	180.0			100	120		SPT Sampler -168.0	25 26 29	55

NOTES:

1. Soils are field visually classified in accordance with the Unified Soils Classification System.

2. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
119	177.0/178.5	*

*Lab visual classification based on gradation curve. No Atterberg limits.

3. Additional Laboratory Testing

119 Moisture Content

REMARKS:

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
NR = Not Recorded.
DT = Drill Time.
HP = Hydraulic Pressure.

175 180 185 190 195

SAJ FORM 1836-A
JUN 02

EVERGLADES AGRICULTURAL AREA RESERVOIR A-1 GEOTECHNICAL DATA REPORT

MARCH 17, 2006

Richard M. Veatch
March 17, 2006

BLACK & VEATCH

South Florida Water Management District
EAA Reservoir A-1 Geotechnical Data Report March 2006

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BLACK & VEATCH

South Florida Water Management District
AA Reservoir A-1 Geotechnical Data Report March, 2006

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APPENDICES

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 AUTHORIZATION FOR GEOTECHNICAL DATA REPORT (GDR)

This geotechnical data report (GDR) and the geotechnical investigations it documents were authorized by the South Florida Water Management District (SFWMD) under Work Order No. 9 (CN040932-WO09) approved on May 12, 2005.

1.2 PURPOSE AND SCOPE OF GDR

The purpose of the GDR is to present the results of geotechnical field investigations and laboratory testing performed for the Everglades Agricultural Area (EAA) Reservoir A-1 under Work Order No. 2, Test (Embankment) Cells, and Work Order No. 9, Supplemental Geotechnical Investigation.

The Test Cell geotechnical investigation was performed to provide information for design of the Test Cell construction and seepage monitoring program.

The supplemental geotechnical field investigation program was developed to provide a more complete characterization of the subsurface conditions for embankment design, embankment stability, settlement, seepage analyses, and to provide information for identifying potential borrow materials. The program was developed considering the results of the previous preliminary geotechnical investigations performed to evaluate the suitability of the EAA Reservoir A-1 Project site, the Test Cell embankment construction results, and requirements for on-site borrow materials.

The locations of borings previously performed were considered when locating the borings for this supplemental program. The previous geotechnical investigations were performed by Williams Earth Sciences, Inc. (separate reports dated June 11 and July 30, 2004) and by Nodarse & Associates (March-May 2004). This information is available upon request to the SFWMD.

Borings CPO5-EAARS-CB-0418 and CPO5-EAARS-CB-0419 were not accessible to the drill rigs. Blank boring logs were prepared for these borings and are included in Appendix 2.

The borings for both the Test Cell investigation and the supplemental investigation were assigned identification numbers using the numbering system developed jointly by the US Army Corps of Engineers (USACE) and the SFWMD. The boring numbers assigned were based on the block of numbers provided by Karen Pitchford of the USACE Jacksonville District office.

1.3 PROJECT DESCRIPTION

The EAA Reservoir A-1 Project (Project) is a feature of the Comprehensive Everglades Restoration Plan (CERP). The plan selected for the expedited EAA Reservoir A-1 design includes the following components:

- Approximately 190,000 acre-feet EAA Reservoir A-1 with a perimeter embankment and seepage canals.

- Northeast pump station that pumps from North New River Canal (3,600 cfs) – this work item is included in Work Order No. 15
- A connector canal from the North New River Canal (NNRC) to the new northeast pump station
- Gated inlet and discharge structures – this work item is included in Work Order No. 15
- Seepage pump station – this work item is included in Work Order No. 15
- New four lane bridge on U.S. Highway 27 across the new connector canal – this work item is included in Work Order No. 15

The Project is located in Palm Beach County, Florida.

The purpose of the Project as defined in the CERP is to capture EAA basin runoff and releases from Lake Okeechobee. The facilities will be designed to improve the timing of environmental water supply deliveries to Stormwater Treatment Area 3/4 (STA-3/4) and the Water Conservation Areas (WCA), reduce Lake Okeechobee regulatory releases to the estuaries, meet supplemental agricultural irrigation deliveries, and increase flood protection within the EAA.

1.4 ORGANIZATION OF GDR

The remainder of this report is divided into three sections: Regional Geologic Setting, Field Exploration Program Summary, and Exploration Results. Regional Geologic Setting is a summary of information available on the Project geology and geologic conditions available in literature. Field Exploration Summary describes the field investigations and procedures and the laboratory testing completed on samples obtained during the investigations. The results of the investigation are described and a summary of the laboratory testing are contained in the Exploration Results Section. Boring logs and piezometer installation logs for the Test Cells and boring logs and piezometer installation logs for the supplemental borings are included in Appendix 1 and Appendix 2, respectively. Photographs of rock core and site photographs are found in Appendix 3. The hydraulic interval test results are included in Appendix 4. The detailed laboratory testing results are contained in Appendix 5.

1.5 LIMITATIONS

The data in this report were based on site conditions existing at the time of the investigations. Unanticipated conditions may be encountered during construction because of variations which were not detected during the investigation program. The construction process may also alter ground conditions. Therefore, experienced geotechnical engineering personnel were required to observe and document the conditions encountered and determine applicability of data.

This report was prepared solely for the benefit of SFWMD by Black & Veatch Corporation (B&V) under the terms and conditions of the written agreement dated July 9, 2004 between SFWMD and B&V ("the Agreement"). Neither SFWMD nor B&V have made analysis, verified, or rendered an independent judgment of the validity of the information provided by others. WHILE IT IS BELIEVED THAT THE INFORMATION AND DATA CONTAINED HEREIN

WILL BE RELIABLE UNDER THE CONDITIONS AND SUBJECT TO THE LIMITATIONS SET FORTH HEREIN, SFWMD AND B&V DO NOT GUARANTEE THE ACCURACY THEREOF. EXCEPT AS OTHERWISE ALLOWED BY THE AGREEMENT, THIS REPORT MAY NOT BE USED BY ANYONE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF B&V, AND SUCH USE SHALL CONSTITUTE AGREEMENT BY THE USER THAT IT'S RIGHTS, IF ANY, ARISING FROM THIS REPORT SHALL BE SUBJECT TO THE TERMS OF THE B&V AUTHORIZATION, AND IN NO EVENT SHALL USER'S RIGHTS, IF ANY, EXCEED THOSE OF SFWMD UNDER THE AGREEMENT.

2.0 REGIONAL GEOLOGIC SETTING

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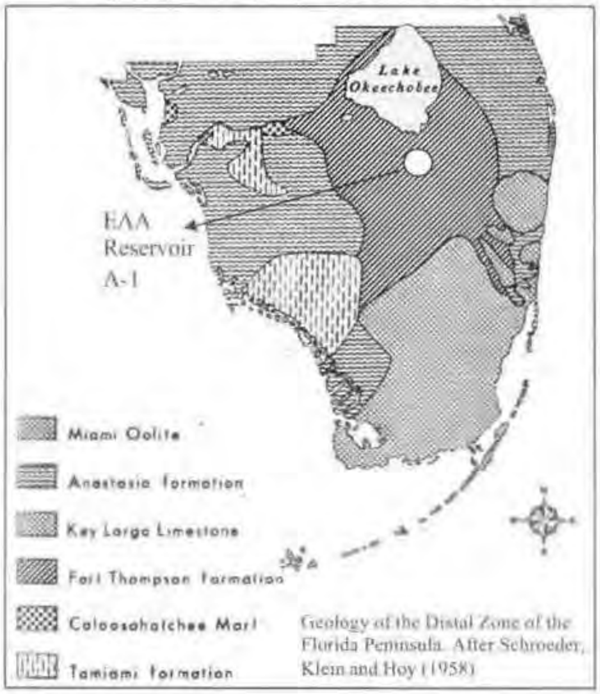
2.0 REGIONAL GEOLOGIC SETTING

Figure 2-1 Regional Surficial Geology of the Southern Florida Peninsula



Geology of the Distal Zone of the Florida Peninsula. After Schroeder, Klein and Hoy (1958)

The following description of the regional geologic setting was developed from a review of selective geologic literature. The EAA Reservoir A-1 Project is located south of Lake Okeechobee within the Everglades physiographic subdivision of the Southern Zone (White, 1970). The Everglades is generally a flat, geologic depression between the Immokalee Rise and Big Cypress Spur physiographic subdivisions on the west, and the Atlantic Coastal Ridge physiographic subdivision on the east. The Everglades extends southward from Lake Okeechobee to Florida Bay with elevations near sea level. With the exception of the EAA, the Everglades landscape consists primarily of sawgrass marsh with hammocks of willow, myrtle, and bay trees.

The United States Department of Agriculture, Natural Resources Conservation Service (NRCS and formerly known as the Soil Conservation Service) published a soil survey for the Palm Beach County area in the mid 1970s (McCollum et. al., 1978). Seven primary soil types were identified in the EAA region as Torry muck, Terra Ceia muck, Pahokee muck, Lauderhill muck, Dania muck, Okeelanta muck, and Okeechobee muck. The soils at EAA Reservoir A-1 include the Pahokee muck (primarily in the southern portion of the site) and Lauderhill muck (primarily in the northern portion of the site). Based on geotechnical borings performed at the EAA Reservoir A-1 Project site, the muck ranges in thickness from less than one foot to approximately five feet.

According to the NRCS, the soils located beneath the former Talisman Sugar Corporation processing facility are classified as Urban land. Urban land soils are those which have been disturbed due to development.

BLACK & VEATCH 2-1

The generalized regional geologic/hydrogeologic conditions for the surficial aquifer system in Palm Beach County are provided in Figure 2-1. It should be recognized that this representation is not all inclusive since the geology in southeast Florida is very complex, particularly the geology of the Plio-Peistocene to Holocene Epochs. However, the primary geologic and hydrogeologic units that are formally recognized in Palm Beach County are represented.

In general, the surface and near surface geology of the region is complex and ranges from unconsolidated, variably calcareous and fossiliferous quartz sands to well indurated, sandy, fossiliferous fresh and marine limestones (Scott, 2001 and Schroeder et al., 1954). These sediments are Pleistocene to recent in age, and blanket most of Palm Beach County except for the Atlantic Coastal Ridge sediments on the east coast. The regional near surface geologic units are generally referred to, in descending order, as the Lake Flirt Marl, Fort Thompson Formation, and Caloosahatchee Formation. The total thickness of these units can range to nearly 50 feet.

The Pliocene-age Tamiami Formation underlies the Caloosahatchee Formation. The Tamiami Formation contains a wide range of mixed carbonate-siliciclastic lithologies and associated faunas (Missimer, 1992). The Tamiami Formation in the area is over 100 feet thick. The Tamiami Formation and overlying geologic units comprise the surficial aquifer system in Palm Beach County. Miller (Wesley, 1987) contoured the bottom of the surficial aquifer system (the top of the Hawthorn Group) in Palm Beach County using existing well logs. According to this work the bottom of the surficial aquifer system in the area of the Test Cell Program and the EAA Reservoir A-1 lies between about -200 to -220 feet.

Other geologic information may indicate that the Caloosahatchee Formation is thin, patchy, or not present at the EAA Reservoir A-1 Project site (Harvey et al., 2002). Also, as illustrated in Figure 2-2, recent geological work (Reese and Cunningham, 2000) has redefined the stratigraphy of the area. Presently, the Tamiami Formation has several recognized named and unnamed geologic members including the Ochopee Limestone Member and the Pinecrest Sand Member. Both Tamiami Formation members contain sandy strata, but the Pinecrest Sand Member is principally shelly, fine grained, quartz sand. The sands in the Caloosahatchee and Tamiami Formations are generally differentiated based on the fossil assemblages observed in outcrops, but key indicator fossils are typically not recovered in borings (Scott, 2005). Therefore, interpretation of the contact between the Caloosahatchee Formation and Tamiami Formation at the EAA Reservoir A-1 Project site is not possible. They will not be differentiated on the boring logs but will be designated the Caloosahatchee and Pinecrest sands.

An unnamed sand formation and the Hawthorn Group, both of Miocene-age, underlie the Tamiami Formation (Reese and Cunningham, 2002). The unnamed sand is thin in the project area, 25 to 30 feet thick and consist of very fine sand and silty sand. The Hawthorn Group consists of an interbedded sequence of widely varying lithologies and components that includes limestone, dolomite, dolosilt, shell, quartz sand, clay, phosphate grains and mixtures of these materials (Reese and Memberg, 2000). The characteristics that distinguish the Hawthorn Group from underlying units are its high and variable siliciclastic and phosphatic content; its color, which can be green, olive-gray, or light gray; and its gamma-ray log response. According to Scott (1988), the Hawthorn Group is approximately 700 feet thick in the region. The Hawthorn Group sediments retard the exchange of groundwater between the overlying surficial aquifer system and the underlying Eocene-age carbonates of the Floridan aquifer system, and are hydrogeologically referred to as the intermediate confining unit.

Eocene-age carbonates underlying the Hawthorn Group include, in descending order, the Ocala Limestone, Avon Park Formation, and Oldsmar Formation. The overlying Oligocene-age Suwannee Limestone is thin to discontinuous in the EAA region, and likely not present in the east half of Palm Beach County (Miller, James, 1986). The cumulative thickness of the Eocene-age carbonates in the region is approximately 2,500 feet (Miller, James, 1986).

Figure 2-2 Generalized Regional Geology and Hydrogeology

(from Reese and Cunningham, 2000)

Series		Lithostratigraphic units		Approximate thickness (feet)	Lithology		Hydrogeologic unit	Approximate thickness (feet)
HOLOCENE		LAKE FLIRT MARL, UNDIFFERENTIATED SOIL AND SAND	UNDIFFERENTIATED	0 - 5	Marl, peat, organic soil, quartz sand	SURFICIAL AQUIFER SYSTEM	WATER TABLE AQUIFER / BISCAYNE AQUIFER	0 - 120
PLEISTOCENE		PAMLICO SAND	UNDIFFERENTIATED	0 - 50	Quartz sand	SURFICIAL AQUIFER SYSTEM	WATER TABLE AQUIFER / BISCAYNE AQUIFER	0 - 120
PLEISTOCENE		MIAMI LIMESTONE	UNDIFFERENTIATED	0 - 30	Oolitic limestone	SURFICIAL AQUIFER SYSTEM	WATER TABLE AQUIFER / BISCAYNE AQUIFER	0 - 120
PLEISTOCENE		FORT THOMPSON FORMATION	UNDIFFERENTIATED	0 - 100	Marine limestone and minor gastropod-rich freshwater limestone	SURFICIAL AQUIFER SYSTEM	WATER TABLE AQUIFER / BISCAYNE AQUIFER	0 - 120
PLEISTOCENE		ANASTASIA FORMATION	UNDIFFERENTIATED	0 - 140	Coquina, quartz sand and sandy limestone	SURFICIAL AQUIFER SYSTEM	WATER TABLE AQUIFER / BISCAYNE AQUIFER	0 - 120
PLEISTOCENE		KEY LARGO LIMESTONE	UNDIFFERENTIATED	0 - 20	Coralline reef rock	SURFICIAL AQUIFER SYSTEM	WATER TABLE AQUIFER / BISCAYNE AQUIFER	0 - 120
PLIOCENE	TAMIAMI FORMATION	PINECREST SAND MEMBER		0 - 90	Quartz sand, pelecypod-rich quartz sandstone, terrigenous mudstone	SURFICIAL AQUIFER SYSTEM	UPPER SEMICONFINING TO CONFINING UNIT	0 - 130
PLIOCENE	TAMIAMI FORMATION	OCHOPEE LIMESTONE MEMBER		0 - 130	Pelecypod lime rudstone and floatstone, pelecypod-rich quartz sand, moldic quartz sandstone	SURFICIAL AQUIFER SYSTEM	GRAY LIMESTONE AQUIFER	0 - 130
MIOCENE		UNNAMED FORMATION		0 - 300	Moldic pelecypod-rich quartz sand or sandstone	SURFICIAL AQUIFER SYSTEM	LOWER SEMICONFINING UNIT	0 - 20
MIOCENE		UNNAMED FORMATION		0 - 300	Quartz sand, sandstone, and pelecypod-rich quartz sand, local abundant phosphate grains	SURFICIAL AQUIFER SYSTEM	SAND AQUIFER(S)	0 - 100
MIOCENE	UPPER HAWTHORN GROUP	PEACE RIVER FORMATION		0 - 300	Clay-rich quartz sand, terrigenous mudstone, diatomaceous mudstone, local abundant phosphate grains		INTERMEDIATE CONFINING UNIT OR INTERMEDIATE AQUIFER SYSTEM	300±

Figure 4. Lithostratigraphic units recognized in the study area, their generalized geology, and relationship with hydrogeologic units. Modified from Olsson (1964), Hunter (1968), Miller (1990), Missimer (1992), and Weedman and others (1999).

3.0 FIELD EXPLORATION PROGRAM SUMMARY

3.0 FIELD EXPLORATION PROGRAM SUMMARY

Plate 1 shows the exploratory borings that have been completed and logged as part of this and previous phases of exploration within the perimeter of the EAA Reservoir A-1, with the exception of the Test Cell borings. Plate 2 shows borings completed and piezometers installed for the Test Cell program. Plate 3 contains the location of hydraulic interval tests. Appendix 1 and Appendix 2 contain the boring logs of borings completed during the Test Cell Program and the Supplemental Geotechnical Investigation, respectively.

3.1 PREVIOUS EXPLORATION PROGRAMS

Soil borings from 50 to 100 feet deep were completed at the planned EAA Reservoir A-1 Project Test Cell site in December 2004 and during the test cell construction in early 2005. The boring location plan is shown in Plate 1. The boring logs for the Test Cell are included in Appendix 1.

One hundred thirty-eight geotechnical borings were completed for the SFWMD around the planned EAA Reservoir A-1 in 2003 and early 2004. Four of those borings are located in the vicinity of the Test Cell site: CB-0068, CB-0069, CB-0140, and CB-0142. Boring CB-0068 is about 800 feet northwest of the Test Cell site borrow area. Boring CB-0069 is located over 1,000 feet west of Test Cell 1. Boring CB-0140 is located about 800 feet east of Test Cell 2. Boring CB-0142 is located about 200 feet east of the borrow area and 1,500 feet north of the Test Cells. The borings were completed between 50.5 and 52 feet deep with rotary wash drilling and split-barrel sampling.

3.2 EXPLORATION PROGRAM FOR DESIGN

Additional borings were completed between December 7, 2004 and September 14, 2005 for design of the temporary embankments for the Test Cell construction and monitoring program and preliminary design of the EAA Reservoir A-1. The boring locations and depths are shown in Table 3-1. Borings TW-0196 through TW-0254 were completed for piezometer installation during the Test Cell construction and monitoring only; they were not sampled or logged.

The Test Cell borings and the supplemental borings were assigned temporary identification numbers prior to drilling. These temporary boring numbers will be referred to as old numbers in this Report. After completion of the Test Cell and supplemental borings, a block of new boring numbers was received from the USACE Jacksonville District office. The borings logs and piezometer installation logs for the Test Cell borings and the supplemental borings contain the boring identification numbers that were assigned by the USACE. Table 3-1 lists the new boring number and the corresponding old boring number.

Table 3-1 Boring Locations and Depths

Old Boring Number	New Boring Number	Depth (feet)	Northing	Easting	Location
Test Cell Borings					
BA-01	CP05-EAARS-CB-0168	50	776662.9	758833.1	Test Cell Borrow
BA-02	CP05-EAARS-CB-0169	50	776662.9	759333.1	Test Cell Borrow
BA-03	CP05-EAARS-CB-0170	50	776662.9	759833.1	Test Cell Borrow
BA-04	CP05-EAARS-CB-0171	50	776162.9	758833.1	Test Cell Borrow
BA-05	CP05-EAARS-CB-0172	50	776162.9	759333.1	Test Cell Borrow
BA-06	CP05-EAARS-CB-0173	50	776162.9	759833.1	Test Cell Borrow
BA-07	CP05-EAARS-CB-0174	50	775662.9	758833.1	Test Cell Borrow
BA-08	CP05-EAARS-CB-0175	50	775662.9	759333.1	Test Cell Borrow
BA-09	CP05-EAARS-CB-0176	50	775662.9	759833.1	Test Cell Borrow
BA-10	CP05-EAARS-CB-0177	50	775662.9	760333.1	Test Cell Borrow
TC-01	CP05-EAARS-CB-0178	50	774612.9	759154.5	Test Cell 1
TC-02	CP05-EAARS-CB-0179	50	774612.9	760243.1	Test Cell 1
TC-03	CP05-EAARS-CB-0180	50	773531.5	759154.5	Test Cell 1
TC-04	CP05-EAARS-CB-0181	50	773531.5	760243.1	Test Cell 1
TC-05	CP05-EAARS-CB-0182	50	774072.2	759698.8	Test Cell 1
TC-06	CP05-EAARS-CB-0183	50	774619.8	761239.5	Test Cell 2
TC-07	CP05-EAARS-CB-0184	50	774619.8	762328.1	Test Cell 2
TC-08	CP05-EAARS-CB-0185	50	773538.4	761239.5	Test Cell 2
TC-09	CP05-EAARS-CB-0186	50	773538.4	762328.1	Test Cell 2
TC-10	CP05-EAARS-CB-0187	50	774079.1	761783.8	Test Cell 2
TC1-E	CP05-EAARS-CB-0188	100	774072.0	760086.3	Test Cell 1
TC1-N	CP05-EAARS-CB-0189	100	774459.7	759698.8	Test Cell 1
TC1-W	CP05-EAARS-CB-0190	100	774072.2	759311.3	Test Cell 1
TC1-S	CP05-EAARS-CB-0191	100	773684.7	759698.8	Test Cell 1
TC2-E	CP05-EAARS-CB-0192	100	774079.1	762171.3	Test Cell 2
TC2-N	CP05-EAARS-CB-0193	100	774466.6	761783.8	Test Cell 2
TC2-W	CP05-EAARS-CB-0194	100	774079.1	761396.3	Test Cell 2
TC2-S	CP05-EAARS-CB-0195	100	773691.6	761783.8	Test Cell 2
PZ1BGSA	CP05-EAARS-TW-0196	25	773021.5	759162.0	TC SW Background
PZ1BGSB	CP05-EAARS-TW-0197	60	773031.5	759162.0	TC SW Background
PZ1BGSC	CP05-EAARS-TW-0198	100	773041.5	759162.0	TC SW Background
PZ1/2BGSA	CP05-EAARS-TW-0199	25	774065.7	760739.5	TC Middle Background
PZ1/2BGSB	CP05-EAARS-TW-0200	60	774075.7	760739.5	TC Middle Background
PZ1/2BGSC	CP05-EAARS-TW-0201	100	774085.7	760739.5	TC Middle Background
PZ2BGSA	CP05-EAARS-TW-0202	25	775109.8	762335.6	TC NE Background
PZ2BGSB	CP05-EAARS-TW-0203	60	775119.8	762335.6	TC NE Background
PZ2BGSC	CP05-EAARS-TW-0204	100	775129.8	762335.6	TC NE Background
PZ2BGSE	CP05-EAARS-TW-0205	25	761239.5	773038.4	TC NE Background
PZ2BGSW	CP05-EAARS-TW-0206	25	762328.1	773038.4	TC NE Background
PZ1N2A	CP05-EAARS-TW-0207	25	774397.9	759697.0	TC1 Inner Bench
PZ1N2B	CP05-EAARS-TW-0208	60	774407.9	759697.0	TC1 Inner Bench
PZ1N2C	CP05-EAARS-TW-0209	100	774417.9	759697.0	TC1 Inner Bench
PZ1N3A	CP05-EAARS-TW-0210	25	774487.9	759697.0	TC1 Outer Bench
PZ1N3B	CP05-EAARS-TW-0211	60	774497.9	759697.0	TC1 Outer Bench
PZ1N3C	CP05-EAARS-TW-0212	100	774507.9	759697.0	TC1 Outer Bench
PZ1E2A	CP05-EAARS-TW-0213	25	774074.0	760028.1	TC1 Inner Bench
PZ1E2B	CP05-EAARS-TW-0214	60	774074.0	760038.1	TC1 Inner Bench

Old Boring Number	New Boring Number	Depth (feet)	Northing	Easting	Location
PZ1E2C	CP05-EAARS-TW-0215	100	774074.0	760048.1	TC1 Inner Bench
PZ1E3A	CP05-EAARS-TW-0216	25	774074.0	760118.1	TC1 Outer Bench
PZ1E3B	CP05-EAARS-TW-0217	60	774074.0	760128.1	TC1 Outer Bench
PZ1E3C	CP05-EAARS-TW-0218	100	774074.0	760138.1	TC1 Outer Bench
PZ1S2A	CP05-EAARS-TW-0219	25	773746.5	759700.6	TC1 Inner Bench
PZ1S2B	CP05-EAARS-TW-0220	60	773736.5	759700.6	TC1 Inner Bench
PZ1S2C	CP05-EAARS-TW-0221	100	773726.5	759700.6	TC1 Inner Bench
PZ1S3A	CP05-EAARS-TW-0222	25	773656.5	759700.6	TC1 Outer Bench
PZ1S3B	CP05-EAARS-TW-0223	60	773646.5	759700.6	TC1 Outer Bench
PZ1S3C	CP05-EAARS-TW-0224	100	773636.5	759700.6	TC1 Outer Bench
PZ1W2A	CP05-EAARS-TW-0225	25	774070.4	759369.5	TC1 Inner Bench
PZ1W2B	CP05-EAARS-TW-0226	60	774070.4	759359.5	TC1 Inner Bench
PZ1W2C	CP05-EAARS-TW-0227	100	774070.4	759349.5	TC1 Inner Bench
PZ1W3A	CP05-EAARS-TW-0228	25	774070.4	759279.5	TC1 Outer Bench
PZ1W3B	CP05-EAARS-TW-0229	60	774070.4	759269.5	TC1 Outer Bench
PZ1W3C	CP05-EAARS-TW-0230	100	774070.4	759259.5	TC1 Outer Bench
PZ2N2A	CP05-EAARS-TW-0231	25	774414.8	761772.0	TC2 Inner Bench
PZ2N2B	CP05-EAARS-TW-0232	60	774414.8	761782.0	TC2 Inner Bench
PZ2N2C	CP05-EAARS-TW-0233	100	774414.8	761792.0	TC2 Inner Bench
PZ2N3A	CP05-EAARS-TW-0234	25	774514.8	761772.0	TC2 Outer Bench
PZ2N3B	CP05-EAARS-TW-0235	60	774514.8	761782.0	TC2 Outer Bench
PZ2N3C	CP05-EAARS-TW-0236	100	774514.8	761792.0	TC2 Outer Bench
PZ2E2A	CP05-EAARS-TW-0237	25	774070.9	762123.1	TC2 Inner Bench
PZ2E2B	CP05-EAARS-TW-0238	60	774080.9	762123.1	TC2 Inner Bench
PZ2E2C	CP05-EAARS-TW-0239	100	774090.9	762123.1	TC2 Inner Bench
PZ2E3A	CP05-EAARS-TW-0240	25	774070.9	762223.1	TC2 Outer Bench
PZ2E3B	CP05-EAARS-TW-0241	60	774080.9	762223.1	TC2 Outer Bench
PZ2E3C	CP05-EAARS-TW-0242	100	774090.9	762223.1	TC2 Outer Bench
PZ2S2A	CP05-EAARS-TW-0243	25	773743.4	761775.6	TC2 Inner Bench
PZ2S2B	CP05-EAARS-TW-0244	60	773743.4	761785.6	TC2 Inner Bench
PZ2S2C	CP05-EAARS-TW-0245	100	773743.4	761795.6	TC2 Inner Bench
PZ2S3A	CP05-EAARS-TW-0246	25	773643.4	761775.6	TC2 Outer Bench
PZ2S3B	CP05-EAARS-TW-0247	60	773643.4	761785.6	TC2 Outer Bench
PZ2S3C	CP05-EAARS-TW-0248	100	773643.4	761785.6	TC2 Outer Bench
PZ2W2A	CP05-EAARS-TW-0249	25	774067.3	774824.8	TC2 Inner Bench
PZ2W2B	CP05-EAARS-TW-0250	60	774077.3	774824.8	TC2 Inner Bench
PZ2W2C	CP05-EAARS-TW-0251	100	774087.3	774824.8	TC2 Inner Bench
PZ2W3A	CP05-EAARS-TW-0252	25	774067.3	774724.8	TC2 Outer Bench
PZ2W3B	CP05-EAARS-TW-0253	60	774077.3	774724.8	TC2 Outer Bench
PZ2W3C	CP05-EAARS-TW-0254	100	774087.3	774724.8	TC2 Outer Bench
Supplemental Borings					
CB-0157	CP05-EAARS-CB-0255	100	781910.0	758371.0	A-1 Northwest Corner
CB-0158	CP05-EAARS-CB-0256	100	781984.0	761965.0	A-1 North Side
CB-0159	CP05-EAARS-CB-0257	100	783716.0	767707.0	A-1 Northeast Corner
CB-0160	CP05-EAARS-CB-0258	100	780135.0	770586.0	A-1 East Side
CB-0161	CP05-EAARS-CB-0259	100	776945.0	772723.0	A-1 East Side
CB-0162	CP05-EAARS-CB-0260	100	773586.0	775208.0	A-1 East Side
CB-0163	CP05-EAARS-CB-0261	100	770322.0	777070.0	A-1 East Side
CB-0165	CP05-EAARS-CB-0262	100	763552.0	781691.0	A-1 East Side
CB-0166	CP05-EAARS-CB-0263	100	759790.0	784911.0	A-1 East Side
CB-0167	CP05-EAARS-CB-0264	100	756500.0	786952.0	A-1 East Side

Old Boring Number	New Boring Number	Depth (feet)	Northing	Easting	Location
CB-0168	CP05-EAARS-CB-0265	100	753214.0	789530.0	A-1 East Side
CB-0169	CP05-EAARS-CB-0266	100	750585.0	791221.0	A-1 Southeast Corner
CB-0170	CP05-EAARS-CB-0267	100	750246.0	787701.0	A-1 South Side
CB-0171	CP05-EAARS-CB-0268	100	750548.0	784355.0	A-1 South Side
CB-0172	CP05-EAARS-CB-0269	100	750220.0	780367.0	A-1 South Side
CB-0173	CP05-EAARS-CB-0270	100	750200.0	776528.0	A-1 South Side
CB-0175	CP05-EAARS-CB-0271	100	750130.0	769310.0	A-1 South Side
CB-0176	CP05-EAARS-CB-0272	100	750233.0	765878.0	A-1 South Side
CB-0177	CP05-EAARS-CB-0273	100	750080.0	762040.0	A-1 South Side
CB-0178	CP05-EAARS-CB-0274	100	750065.0	758699.0	A-1 Southwest Corner
CB-0179	CP05-EAARS-CB-0275	100	756315.0	758665.0	A-1 West Side
CB-0180	CP05-EAARS-CB-0276	100	764107.0	758486.0	A-1 West Side
CB-0181	CP05-EAARS-CB-0277	100	761543.0	760487.0	A-1 West Side
CB-0183	CP05-EAARS-CB-0278	100	768827.0	758019.0	A-1 West Side
CB-0184	CP05-EAARS-CB-0279	100	772221.0	757980.0	A-1 West Side
CB-0185	CP05-EAARS-CB-0280	100	776165.0	758181.0	A-1 West Side
CB-0186	CP05-EAARS-CB-0281	100	779806.0	757877.0	A-1 West Side
CB-0164	CP05-EAARS-RB-0282	240	766996.0	778268.0	A-1 East Side
CB-0174	CP05-EAARS-RB-0283	220	750072.0	773031.0	A-1 South Side
CB-0182	CP05-EAARS-RB-0284	240	764456.0	758050.0	A-1 West Side
CB-0190	CP05-EAARS-RB-0285	250	781923.0	766198.0	A-1 North Side
CB-0205	CP05-EAARS-RB-0286	220	764359.0	768550.0	A-1 Central
CB-0187	CP05-EAARS-CB-0287	31.5	783422.0	760195.0	A-1 North Side
CB-0188	CP05-EAARS-CB-0288	30	782018.0	762205.0	A-1 North Side
CB-0189	CP05-EAARS-CB-0289	30	783462.0	764332.0	A-1 North Side
CB-0191	CP05-EAARS-CB-0290	40.5	782440.0	768965.0	A-1 East Side
CB-0192	CP05-EAARS-CB-0291	42.5	780905.0	770048.0	A-1 East Side
CB-0193	CP05-EAARS-CB-0292	42.5	779231.0	771249.0	A-1 East Side
CB-0194	CP05-EAARS-CB-0293	42	777645.0	772355.0	A-1 East Side
CB-0195	CP05-EAARS-CB-0294	40	776025.0	773483.0	A-1 East Side
CB-0196	CP05-EAARS-CB-0295	30.5	774369.0	774657.0	A-1 East Side
CB-0197	CP05-EAARS-CB-0296	30	773030.0	775594.0	A-1 East Side
CB-0198	CP05-EAARS-CB-0297	30.5	771865.0	776117.0	A-1 East Side
CB-0199	CP05-EAARS-CB-0298	30.5	769649.0	777979.0	A-1 East Side
CB-0200	CP05-EAARS-CB-0299	30.5	768142.0	779025.0	A-1 East Side
CB-0201	CP05-EAARS-CB-0300	100	766330.0	780308.0	A-1 East Side
CB-0202	CP05-EAARS-CB-0301	30.5	764988.0	781256.0	A-1 East Side
CB-0203	CP05-EAARS-CB-0302	30.5	763912.0	781642.0	A-1 East Side
CB-0204	CP05-EAARS-CB-0303	30.5	761612.0	783518.0	A-1 East Side
CB-0206	CP05-EAARS-CB-0304	34.1	758279.0	785951.0	A-1 East Side
CB-0207	CP05-EAARS-CB-0305	10	778649.0	757994.0	A-1 West Side
CB-0208	CP05-EAARS-CB-0306	30.5	755048.0	788246.0	A-1 East Side
CB-0209	CP05-EAARS-CB-0307	30.5	753802.0	789084.0	A-1 East Side
CB-0210	CP05-EAARS-CB-0308	30.5	751534.0	790688.0	A-1 East Side
CB-0211	CP05-EAARS-CB-0309	30	750759.0	790521.0	A-1 South Side
CB-0212	CP05-EAARS-CB-0310	35	750227.0	788770.0	A-1 South Side
CB-0213	CP05-EAARS-CB-0311	30	750238.0	786937.0	A-1 South Side
CB-0214	CP05-EAARS-CB-0312	36.5	750245.0	785150.0	A-1 South Side
CB-0215	CP05-EAARS-CB-0313	30	750216.0	782576.0	A-1 South Side
CB-0216	CP05-EAARS-CB-0314	35	750217.0	781148.0	A-1 South Side
CB-0217	CP05-EAARS-CB-0315	35.5	750528.0	779484.0	A-1 South Side

Old Boring Number	New Boring Number	Depth (feet)	Northing	Easting	Location
CB-0218	CP05-EAARS-CB-0316	35.5	750184.0	777664.0	A-1 South Side
CB-0219	CP05-EAARS-CB-0317	35.5	750159.0	775119.0	A-1 South Side
CB-0220	CP05-EAARS-CB-0318	30	750133.0	771127.0	A-1 South Side
CB-0221	CP05-EAARS-CB-0319	30.5	750096.0	767133.0	A-1 South Side
CB-0222	CP05-EAARS-CB-0320	30.5	750098.0	764793.0	A-1 South Side
CB-0223	CP05-EAARS-CB-0321	30.5	750082.0	763010.0	A-1 South Side
CB-0224	CP05-EAARS-CB-0322	35.5	750063.0	761074.0	A-1 South Side
CB-0225	CP05-EAARS-CB-0323	35	749972.0	759269.0	A-1 South Side
CB-0226	CP05-EAARS-CB-0324	35	751817.0	758603.0	A-1 West Side
CB-0227	CP05-EAARS-CB-0325	100	753491.0	758559.0	A-1 West Side
CB-0228	CP05-EAARS-CB-0326	35	755754.0	758535.0	A-1 West Side
CB-0229	CP05-EAARS-CB-0327	35	759750.0	758452.0	A-1 West Side
CB-0230	CP05-EAARS-CB-0328	35	765187.0	758085.0	A-1 West Side
CB-0231	CP05-EAARS-CB-0329	35	766160.0	758074.0	A-1 West Side
CB-0232	CP05-EAARS-CB-0330	30	767982.0	758285.0	A-1 West Side
CB-0233	CP05-EAARS-CB-0331	30	770143.0	758448.0	A-1 West Side
CB-0234	CP05-EAARS-CB-0332	30	775274.0	757910.0	A-1 West Side
CB-0235	CP05-EAARS-CB-0333	30	777640.0	757885.0	A-1 West Side
CB-0237	CP05-EAARS-CB-0334	30	754301.0	763206.0	A-1 Interior
CB-0238	CP05-EAARS-CB-0335	5.9	752382.0	769861.0	A-1 Interior
CB-0239	CP05-EAARS-CB-0336	30	752409.0	777773.0	A-1 Interior
CB-0240	CP05-EAARS-CB-0337	35	752266.0	784343.0	A-1 Interior
CB-0241	CP05-EAARS-CB-0338	7.5	754254.0	760704.0	A-1 Interior
CB-0242	CP05-EAARS-CB-0339	6.3	754350.0	769805.0	A-1 Interior
CB-0243	CP05-EAARS-CB-0340	30	754387.0	777734.0	A-1 Interior
CB-0244A	CP05-EAARS-CB-0341	36.5	754265.0	784323.0	A-1 Interior
CB-0244B	CP05-EAARS-CB-0342	35	754260.0	784326.0	A-1 Interior
CB-0245	CP05-EAARS-CB-0343	35	753277.0	786955.0	A-1 Interior
CB-0246	CP05-EAARS-CB-0344	6	758902.0	761980.0	A-1 Interior
CB-0247	CP05-EAARS-CB-0345	35.5	759005.0	768493.0	A-1 Interior
CB-0248	CP05-EAARS-CB-0346	10.6	758928.0	773757.0	A-1 Interior
CB-0249	CP05-EAARS-CB-0347	12.5	759074.0	780380.0	A-1 Interior
CB-0250	CP05-EAARS-CB-0348	8.5	761558.0	761980.0	A-1 Interior
CB-0251	CP05-EAARS-CB-0349	35.5	761600.0	768479.0	A-1 Interior
CB-0252	CP05-EAARS-CB-0350	12.5	761622.0	773855.0	A-1 Interior
CB-0253	CP05-EAARS-CB-0351	12	761656.0	779502.0	A-1 Interior
CB-0254	CP05-EAARS-CB-0352	34.3	759736.0	781668.0	A-1 Interior
CB-0255	CP05-EAARS-CB-0353	30	766808.0	760677.0	A-1 Interior
CB-0256	CP05-EAARS-CB-0354	9	766942.0	765980.0	A-1 Interior
CB-0257	CP05-EAARS-CB-0355	30	766738.0	771193.0	A-1 Interior
CB-0258	CP05-EAARS-CB-0356	13.5	766672.0	776448.0	A-1 Interior
CB-0259	CP05-EAARS-CB-0357	8	769496.0	760663.0	A-1 Interior
CB-0260	CP05-EAARS-CB-0358	14.5	769587.0	765916.0	A-1 Interior
CB-0261	CP05-EAARS-CB-0359	35	769421.0	770701.0	A-1 Interior
CB-0263	CP05-EAARS-CB-0360	35	774655.0	768482.0	A-1 Interior
CB-0264	CP05-EAARS-CB-0361	35	778254.0	768440.0	A-1 Interior
CB-0265	CP05-EAARS-CB-0362	30	781745.0	760432.0	A-1 Interior
CB-0266	CP05-EAARS-CB-0363	13	777293.0	771082.0	A-1 Interior
CB-0267	CP05-EAARS-CB-0364	14	774291.0	771181.0	A-1 Interior
CB-0268	CP05-EAARS-CB-0365	35	776579.0	765894.0	A-1 Interior
CB-0270	CP05-EAARS-CB-0366	14	752268.0	760704.0	A-1 Interior

Old Boring Number	New Boring Number	Depth (feet)	Northing	Easting	Location
CB-0271	CP05-EAARS-CB-0367	30	752295.0	763219.0	A-1 Interior
CB-0272	CP05-EAARS-CB-0368	30	753762.0	767506.0	A-1 Interior
CB-0273	CP05-EAARS-CB-0369	30	753688.0	772154.0	A-1 Interior
CB-0274	CP05-EAARS-CB-0370	10.6	753744.0	775377.0	A-1 Interior
CB-0275	CP05-EAARS-CB-0371	35	753720.0	780369.0	A-1 Interior
CB-0276	CP05-EAARS-CB-0372	35.5	757929.0	776397.0	A-1 Interior
CB-0277	CP05-EAARS-CB-0373	35.5	758102.0	771124.0	A-1 Interior
CB-0278	CP05-EAARS-CB-0374	35.5	758247.0	765845.0	A-1 Interior
CB-0279	CP05-EAARS-CB-0375	35.5	762100.0	763174.0	A-1 Interior
CB-0280	CP05-EAARS-CB-0376	35.5	758795.0	760203.0	A-1 Interior
CB-0281	CP05-EAARS-CB-0377	35.5	756384.0	773911.0	A-1 Interior
CB-0282	CP05-EAARS-CB-0378	12.5	758500.0	760561.0	A-1 Interior
CB-0283	CP05-EAARS-CB-0379	13.5	769333.0	775402.0	A-1 Interior
CB-0284	CP05-EAARS-CB-0380	12	750090.0	763879.0	A-1 South Side
CB-0285	CP05-EAARS-CB-0381	10	773957.0	760070.0	A-1 Interior
CB-0286	CP05-EAARS-CB-0382	15	750598.0	784000.0	A-1 South Side
CB-0287	CP05-EAARS-CB-0383	11.5	773646.0	757946.0	A-1 West Side
CB-0288	CP05-EAARS-CB-0384	12	757725.0	783598.0	A-1 Interior
CB-0289	CP05-EAARS-CB-0385	12	764206.0	772656.0	A-1 Interior
CB-0290	CP05-EAARS-CB-0386	6.1	764152.0	761783.0	A-1 Interior
CB-0291	CP05-EAARS-CB-0387	12	772195.0	775012.0	A-1 Interior
CB-0292	CP05-EAARS-CB-0388	10	773931.0	759315.0	A-1 Interior
CB-0293	CP05-EAARS-CB-0389	13	783437.0	761044.0	A-1 Interior
CB-0294	CP05-EAARS-CB-0390	10.5	782063.0	757971.0	A-1 Interior
CB-0295	CP05-EAARS-CB-0391	12	750115.0	768244.0	A-1 Interior
CB-0296	CP05-EAARS-CB-0392	10	774441.0	759699.0	A-1 Interior
CB-0297	CP05-EAARS-CB-0393	10	773699.0	761785.0	A-1 Interior
CB-0298	CP05-EAARS-CB-0394	12	776830.0	772805.0	A-1 East Side
CB-0299	CP05-EAARS-CB-0395	40	763485.0	781629.0	A-1 East Side
CB-0300	CP05-EAARS-CB-0396	35	770101.0	777065.0	A-1 East Side
CB-0301	CP05-EAARS-CB-0397	12	757683.0	774766.0	A-1 Interior
CB-0302	CP05-EAARS-CB-0398	17	750753.0	791158.0	A-1 Southeast Corner
CB-0303	CP05-EAARS-CB-0399	13	758686.0	750096.0	A-1 Southwest Corner
CB-0304	CP05-EAARS-CB-0400	35.5	764135.0	758486.0	A-1 West Side
CB-0305	CP05-EAARS-CB-0401	10	779802.0	757725.0	A-1 West Side
CB-0306	CP05-EAARS-CB-0402	15	750729.0	791135.0	South Side
CB-0307	CP05-EAARS-CB-0403	11.5	761502.0	760599.0	A-1 West Side
CB-0308	CP05-EAARS-CB-0404	11.5	776148.0	757913.0	A-1 West Side
CB-0309	CP05-EAARS-CB-0405	35	775014.0	773698.0	A-1 East Side
CB-0310	CP05-EAARS-CB-0406	35	778285.0	765848.0	A-1 Interior
CB-0311	CP05-EAARS-CB-0407	38.5	756377.0	786638.0	A-1 East Side
CB-0312	CP05-EAARS-CB-0408	16	753570.0		A-1 West Side on Main Canal Levee
CB-0313	CP05-EAARS-CB-0409	16	757151.0		A-1 West Side On Main Canal Levee
CB-0314	CP05-EAARS-CB-0410	15.3	760732.0		A-1 South Side on Main Canal Levee
CB-0315	CP05-EAARS-CB-0411	12		762679.0	A-1 South Side on Main Canal Levee
CB-0316	CP05-EAARS-CB-0412	12		766635.0	A-1 South Side on Main Canal Levee

Old Boring Number	New Boring Number	Depth (feet)	Northing	Easting	Location
CB-0317	CP05-EAARS-CB-0413	12		770593.0	A-1 South Side on Main Canal Levee
CB-0318	CP05-EAARS-CB-0414	13	750042.0	774548.0	A-1 South Side on Main Canal Levee
CB-0319	CP05-EAARS-CB-0415	14	750050.0	778522.0	A-1 South Side on Main Canal Levee
CB-0320	CP05-EAARS-CB-0416	17		782462.0	A-1 South Side on Main Canal Levee
CB-0321	CP05-EAARS-CB-0417	11.5	750108.0	786154.0	A-1 South Side on Main Canal Levee

A-1= EAA Reservoir A-1

3.2.1 Test Cell Borings

The Test Cell program involved the design, construction, installation of instrumentation, and monitoring of seepage from two Test Cells. Each Test Cell measured 500 feet square (at the embankment centerline) and consisted of an impoundment enclosed by a zoned earthen embankment surrounded by a seepage collection canal. The Test Cell site is located within the footprint of the planned EAA Reservoir A-1. Construction of the Test Cells was completed between January 10 and April 9, 2005.

Twenty geotechnical borings, CP05-EAARS-CB-0168 to CP05-EAARS-CB-0187, were completed at the Test Cell site in December of 2004, ten at the site borrow area and five at each Test Cell for design of the cells. The borings were drilled to a depth of 50 feet, primarily by rotary wash drilling using a heavy drilling mud to support the holes. The near surface limestone (caprock) was cored in each one of the holes, and a deeper, thinner limestone was cored at about 26 feet depth in two of the borings. Soils were sampled with Standard Penetration Test (SPT) methods. Drilling began on December 7, 2004 with the mobilization of two Diedrich D-50 Turbo drilling rigs to the site and was completed on December 11, 2004.

During the Test Cell program a series of eight borings CP05-EAARS-CB-0188 to CP05-EAARS-CB-0195, were drilled to a depth of 100 feet, one on each side of each Test Cell, to aid in the placement of Test Cell piezometer sensing zones. Test Cell piezometer installation logs are shown in Appendix 1. The borings were collared in the caprock in the stripped foundation of the Test Cells. The caprock was cored in three of the borings but drilled with a tricone bit in the others. The remainder of each boring was completed by rotary wash methods with soil sampling by SPT methods. The drilling was done with a Diedrich D-50 Turbo drilling rig. The two Test Cells were drilled over different time periods and the boring sequence was selected to not interfere with the Test Cell construction. The Test Cell 2 borings were completed between February 8 and 11, 2005. Test Cell 1 borings were completed between February 23 and 28, 2005.

3.2.2 Supplemental Borings

Borings CP05-EAARS-CB-0255 to CP05-EAARS-CB-0281, CP05-EAARS-CB-0282 to CP05-EAARS-CB-0286, and CP05-EAARS-CB-0287 to CP05-EAARS-CB-0417 were drilled for the supplemental geotechnical investigation. The supplemental geotechnical investigation included 100-foot deep perimeter borings, 30-foot deep perimeter borings intermediate between the 100-foot borings, and 50-foot deep interior borings. The exploration program also included 250 feet deep borings drilled to obtain continuous samples and to perform hydraulic interval testing. The

100-foot deep borings were generally drilled between the existing borings performed in 2003 and 2004, to achieve an equidistant spacing around the perimeter of the proposed EAA Reservoir A-1. The main purpose of the 100-foot deep borings was to investigate the stratigraphy beneath the proposed embankment and to provide data for developing seepage models. The 30-foot deep perimeter borings were placed between the 100 feet deep borings. This resulted in a spacing a perimeter boring spacing of about 900 to 1,000 feet. The interior borings were placed to fill gaps between the borings completed in 2003 and 2004. The resultant spacing of interior borings is between 2,000 and 3,000 feet. The primary purpose of the interior borings was to provide information for assessing the availability of borrow materials, especially the limestone caprock.

The five 250-feet deep rotosonic drill borings were drilled to characterize the stratigraphy and perform hydraulic testing at selected intervals. One boring was located at the approximate center of the planned EAA Reservoir A-1 and one near the middle of each side of the EAA Reservoir A-1. Piezometer installations for rotosonic drill borings are shown in Appendix 2. The exploration program began with the 100-foot perimeter borings to establish the general, overall site conditions. These were followed by the 30-foot perimeter borings, and then the interior borings. The 250-foot borings were scheduled and completed between July 25 and August 14, 2005.

The planned program was modified during drilling on the basis of the subsurface conditions discovered. Some of the planned 30-foot perimeter borings were deepened to core a limestone layer often encountered at 25 to 35 feet depth. The strength and continuity of this layer was investigated because any proposed cut-off wall would be excavated through it. Many of the interior borings were shortened when it became evident that shallow material for potential borrow below the caprock was consistent and continuous. These borings were terminated below the caprock.

Two series of borings were added to the program. Twenty-five short borings were added to check the caprock thickness at locations where previous borings had indicated thin, absent, or unusually thick caprock, or produced inconsistent data on the thickness. Ten shallow (approximately 12 to 16 feet deep) borings were also added to investigate the fill placed to construct the STA-3/4 main Supply Canal levee that is adjacent to the proposed EAA Reservoir A-1. The borings performed for the Test Cells, the piezometer borings and the borings performed during the summer of 2005 are listed in Table 3-1 with their depths and location coordinates.

The majority of the drilling was completed with standard rotary wash drilling in soil and rock coring, except the five deeper holes that were completed by rotosonic drilling. Five different drill rigs were used during the course of the investigations:

- Two Diedrich D-50 Turbo rotary drill rigs mounted on all-terrain-vehicles (ATV) with large pneumatic tires
- CME-55 rotary, truck mounted drill rig
- CME-45B rotary, tracked vehicle (Go Track) mounted drill rig
- SRO-190 truck mounted rotosonic drill rig

Drilling began the week of June 20, 2005 with one Diedrich D-50 Turbo on an ATV. The following week the second Diedrich D-50 Turbo rig was mobilized, and the week of July 11, 2005 the CME-55 was brought to the site. One of the Diedrich D-50 Turbo rigs was replaced by the CME-45B track mounted rig on August 30, 2005 because it was better suited to reach some of the interior holes with difficult access. The track mounted rig left the site on September 13, 2005 followed by the other rotary rigs on the following day when drilling was completed. The SRO-190 truck mounted rotosonic drill rig was on site from July 26 though August 12, 2005.

3.3 BORING LAYOUT AND SURVEYS

Boring locations and elevations for the supplemental borings were determined by Weidener Surveying and Mapping. The December Test Cell program borings were located by taping from existing surveyed points established by Weidener Surveying and Mapping. During the Test Cell construction the borings were located by taping from previously installed surveyed points established by the Test Cell contractor. The supplemental borings were originally located in the field at the planned coordinates using hand-held GPS units. The finished holes were staked for later survey. During the time period between the completion of the supplemental borings and the survey, many of the stakes were destroyed by hurricane Katrina and farming activities. The locations given on the boring logs are the surveyed location when available, or the GPS location when no survey data was available.

3.4 DRILLING PROCEDURES

Except for the five rotosonic drilled holes, the borings were advanced by a combination of rotary wash boring and coring. Coring with HQ sized core barrels was used to sample the caprock and deeper limestones in some of the rotary wash borings. Double tube, swivel type, "M" design core barrels were used to recover rock cores according to the American Society for Testing and Materials (ASTM) D2113 test procedure. Core runs were restricted to a length of five feet. When coring below the caprock, 4-inch casing was advanced down to the cored interval to prevent the hole from caving onto the core barrel. The core was placed into temporary, waxed, corrugated paper boxes and core pieces of suitable length for unconfined compressive strength were wrapped in plastic film and aluminum foil to prevent dehydration. Total core recovery and Rock Quality Designation (RQD) were measured and calculated for each coring run according to ASTM D6032.

Rock bits with heavy bentonite mud flush were used to advance the borings through soil-like materials and through intervals of limestone that were not cored. The mud was recirculated through a trough that was periodically cleaned of the retained cuttings. Occasionally, caving conditions were encountered in the borehole and casing had to be advanced through the caving interval to keep the borehole open.

The soils were sampled with split-barrel samplers using the Standard Penetration Test (SPT) method in accordance with ASTM D1586 at 2.5-foot intervals or continuously above 10 feet depth and 5-foot intervals below 10 feet depth. In two of the 100-foot borings, CB-0256 and CB-0266, continuous split barrel samples were completed for the full length of the boreholes below the caprock. The soil samples were logged according to ASTM D2488 test procedures and placed in jars for transport to the testing laboratory.

Five holes, RB-0282 through RB-0286, were completed using a rotosonic drilling rig which drives a casing and core barrel into the ground by means of high frequency resonant energy. The core barrel was advanced and then overridden by the larger diameter casing that maintains an open hole and prevents material from collapsing into the borehole. The nominal outside diameter of the casing was six inches and the outside diameter of the core barrel was five inches. The hole was cased continuously for the full depth and a continuous sample was recovered from the core barrel and placed into thin plastic tubes for inspection and subsequent sampling. These tubes were placed in corrugated plastic boxes. Samples were taken at 5-foot intervals from the plastic boxes and placed in 1-gallon plastic bags for shipment to the laboratory. The plastic core boxes are currently stored in a container at the SFWMD G-370 Pump Station construction trailer site.

All borings that were not used for piezometer installation were backfilled with cement/bentonite grout immediately upon completion.

3.5 PIEZOMETER INSTALLATION PROCEDURES

Standpipe piezometers were installed in three of the borings performed by the rotasonic drilling method. The piezometers were installed for long term monitoring of water levels, groundwater sampling and possibly extended aquifer performance tests in the future.

The installations comprise 3-inch diameter schedule S/40 PVC well casing and slotted screen. The slotted screen is 10 feet long and set in a sand filter. The screen has four rows of 0.010-inch slots at 3/16-inch spacing. The sand pack sensing zone is isolated with bentonite seals above and below the screen.

The installation details are shown in Table 3-2.

Table 3-2 Piezometer Installation Details

	Boring		
Installation Detail Depths (Feet)	RB-0283	RB-0284	RB-0286
Upper Grout And Bentonite Seal (Feet)	Ground surface to 108	Ground surface to 68	Ground surface to 148
Sensing Zone (Feet)	108 to 121.5	68 to 81	148 to 161
Lower Bentonite Seal (Feet)	121.5 to 220	81 to 240	161 to 220
Aquifer Monitored	Ochopee limestone of the Tamaimi Formation	Ochopee limestone of the Tamaimi Formation	Ochopee limestone of the Tamaimi Formation

3.6 HYDRAULIC INTERVAL TESTING PROCEDURE

A program of hydraulic interval tests was performed during the investigation over the period of July to August, 2005. These tests were carried out in the rotosonic drilled borings at intervals as the borings were drilled to final depth. A 10-foot interval was drilled for each test. However, the open hole depth was measured again after the testing, and it was often less than the drilled 10 feet, indicating that the hole had partially collapsed during the testing. The depth intervals that were tested are listed in Table 3-3 along with the corresponding static water level.

Table 3-3 Hydraulic Interval Test Locations

Intervals	RB-0282	RB-0283	RB-0284	RB-0285	RB-0286
Drilled Depth (feet)	Depth to static water level (feet), measured post-test zone	Depth to static water level (feet), measured post-test zone	Depth to static water level (feet), measured post-test zone	Depth to static water level (feet), measured post-test zone	Depth to static water level (feet), measured post-test zone
40-50		6.39 (40-49)	7.62 (40-46)	11.7 (40-50)	8.2 (40-52)
60-70	8.2 (60-64)				
70-80		7.44 (70-80)	7.45 (70-77)	11.68 (70-80)	8.3 (70-78.5)
80-90	8.21 (80-87)				
110-120		7.58 (150-160)	7.655 (110-118.5)	11.4 (110-120)	8.45 (110-120)
120-130	8.21 (120-130)				
150-160	7.95 (150-156)	7.67 (150-160)	7.79 (150-160)	11.44 (150-160	8.53 (150-160)

Note: Water levels are measured from the deck of the drill rig.

Wherever possible a length of open hole was formed beneath the bottom of the casing and an electric submersible pump (2-inch diameter, 1.5HP Grundfos Model 15 SQ/SQE 290) was lowered into the casing and water was pumped out. There was a period of development pumping lasting up to two hours to clean up the discharge (removal of suspended material) that was followed by the hydraulic interval test. Initially the pumping was carried out at increasing discharge rates; this regime was then changed to pumping at one continuous discharge rate for the duration of the pumping phase. Water levels and discharge measurements were made throughout the pumping period. On cessation of pumping, recovery water level measurements were made.

Where the borehole would not stay open below the casing, a 10-foot length of well screen (Johnson continuous slot wire wrapped stainless steel) was lowered into the zone, and the top of the screen was sealed at the bottom of the cased length by means of a pneumatic packer. The 2- inch diameter electric submersible pump assembly was then used to pump out the water.

In two boreholes (RB-0283 and RB-0284) the pH, temperature and electric conductivity of the water discharged was monitored during the pumping phase. Readings were taken early in the pumping stage, usually within the first 20 minutes of the test. The later readings were taken prior to stopping the pump.

3.7 LABORATORY TESTING PROCEDURES

Laboratory testing was assigned for selected samples of soil and rock core from the borings. Laboratory testing was performed by Nodarse & Associates, Inc. The testing procedures assigned are identified in Table 3-4 and Table 3-5

Table 3-4 Laboratory Rock Testing Procedures

Rock Laboratory Test	Testing Procedure
Unconfined Compressive Strength (UCS)	ASTM D2938
Resistance to Degradation by Abrasion	ASTM C535
Sulfate Soundness	ASTM C88
Specific Gravity and Absorption	ASTM D6473

Table 3-5 Laboratory Soil Testing Procedures

Soil Laboratory Test	Testing Procedure
Grain Size Analysis	ASTM D422
Carbonate Content (CO_3)	Florida DOT
Corrosivity	Florida DOT
Moisture Content	ASTM D2216
Hydrometer Analysis	ASTM D422

4.0 EXPLORATION RESULTS

4.0 EXPLORATION RESULTS

4.1 GEOLOGY

The site is generally covered by approximately one half to two feet of surficial peat/muck and marl. The marl beneath the peat and muck is known by some authors as the Lake Flirt Marl (Reese and Cunningham, 2000; Harvey et. al., 2002), but is undifferentiated from the peat and muck layer for this report. The borings completed at the Test Cell site in December 2004, during the Test Cell Program and during the supplemental investigation penetrated through the surficial peat, marl, (in some locations) road fill, and caprock, then through about 15 to 40 feet of primarily carbonate sand and limestone, and then into primarily shelly quartz sand with sparse limestone for about 25 to 60 feet.

The upper carbonate sand and limestone constitutes the Fort Thompson Formation at the site. At the top of the Fort Thompson is a hard limestone layer generally about 3.5 to 6-foot thick, locally called caprock. The caprock is underlain primarily by silty carbonate sand varying from about 18 to 42 feet depth where another hard limestone layer, generally 1.5 to 3-foot thick, is often encountered. Visual inspection of the sand samples from the borings reveals that the sand consists at least partly of shell fragments, and tends to be angular and platy. Thinner, hard limestone layers are sometimes encountered in the interval.

All the limestone layers exposed in cores from the site are very fossiliferous. The silty sand of the Fort Thompson Formation is also abundantly fossiliferous with gastropods, pelecypods, corals, and echinoderms. The caprock is white, light gray, tan and yellowish brown. The sand and lower limestone layers are white to very pale brown.

Below the Fort Thompson Formation, the shelly sand with sparse limestone constitutes the Caloosahatchee Formation and the upper member (the Pinecrest Sand) of the Tamiami Formation, which are not differentiated in this report. The deeper borings penetrated into mixed carbonate and quartz sand with carbonate predominant. The mixed sand with carbonate sand predominate is the Ochopee Limestone member of the Tamiami Formation.

The deepest borings, the rotosonic borings, passed through the mixed carbonated and quartz sand and then between 140 to 177-foot depth into very fine sand and silty sand grading to clayey sand at 191 to 200-foot depth. The very fine quartz sand and silty to clayey sand belongs to the unnamed sand formation and the top of the underlying Peace River Formation.

4.2 GROUND CONDITIONS AND LABORATORY TESTING RESULTS

The identification of the stratigraphic units below the Fort Thompson Formation in the borings is based on descriptions in Reese and Cunningham (2000). The laboratory testing results are summarized in Table 4-1 through Table 4-6. Figures 4-1 and 4-2 plot soil sample percent passing the 200 sieve and carbonate content versus depth, respectively.

Figure 4-1 Percent Finer Than the 200 Sieve Versus Sample Depth

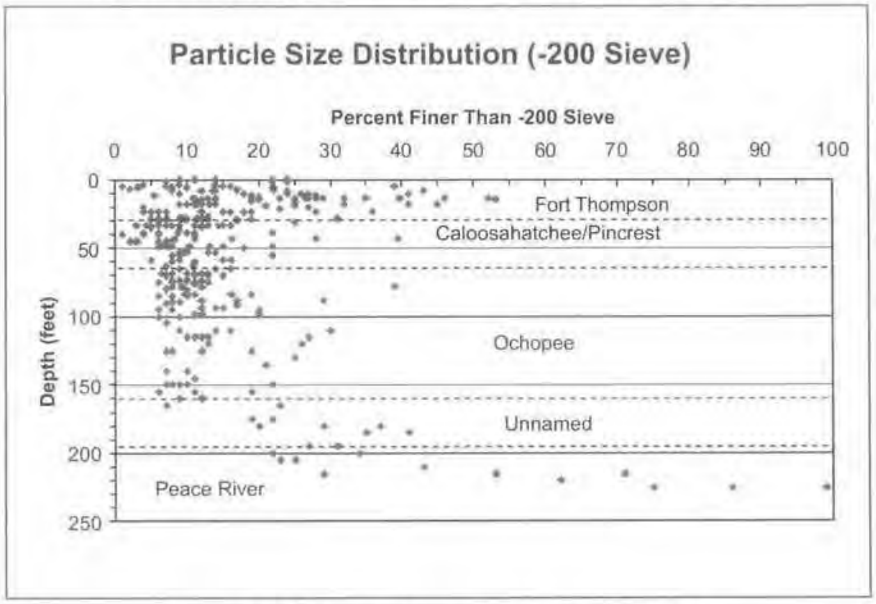
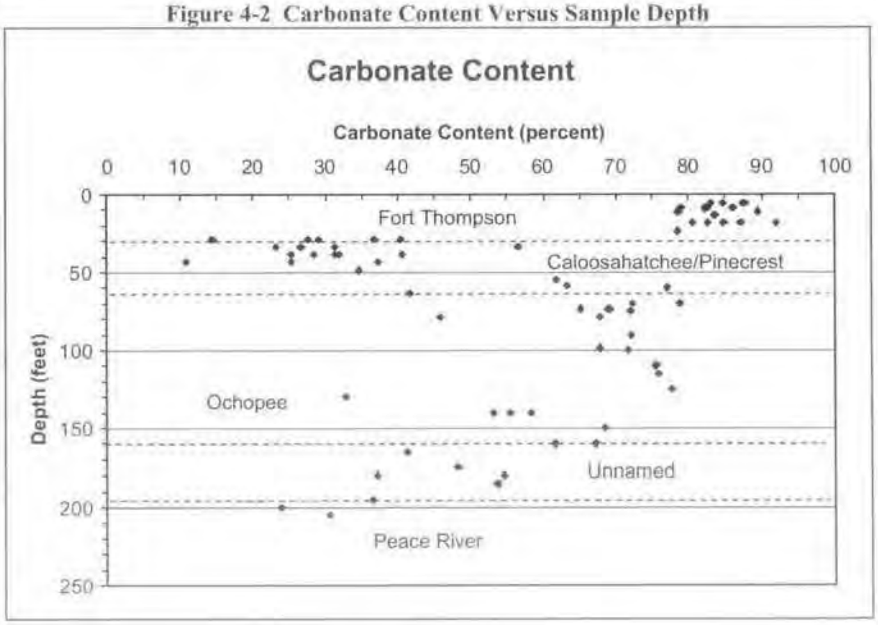


Figure 4-2 Carbonate Content Versus Sample Depth



4.2.1 Caprock

Immediately below the site soil layer is the top of the Fort Thompson Formation, a limestone layer locally called caprock. The thickness of the caprock in the borings ranged from 0 to 9.2-foot thick, but it is most often about 3.5 to 6-foot thick. The caprock is not a uniform hard limestone. It is thinly to medium bedded with bedding thickness generally less than one foot. The beds range from dense, hard, and strong to soft and friable. The hardness, strength, and density are related to the amount of fine, carbonate cement in the limestone. The softest beds consist of poorly cemented, calcite sand grains with possible shell fragments. In other beds, the grains are cemented at the contacts, and the rock is porous but generally moderately hard and moderately strong. In the hard and strong beds the grains are completely contained in a matrix of fine grained cement.

The caprock is jointed and contains solution cavities including local areas of anastomosing channels especially near the top, and single channels up to several inches in diameter that penetrate the full thickness. The solution channels in the caprock locally contain soil including the peat and marl.

Because of the variable material quality, core recovery from the borings was generally under 50 percent. The core recovery from the caprock ranged from 0 to 100 percent with an average of 42.4 percent. The RQD ranged from 0 to 92 percent with an average of 19 percent. The combination of variable rock hardness, thin bedding, and solution cavities combined to produce the low core recovery and RQD.

Pieces of core with sufficient length were selected from the borings, wrapped to preserve them, and sent to a laboratory for unconfined compressive strength (ASTM D2938), specific gravity and absorption testing (ASTM D6473). Crushed stone produced from the caprock during the Test Cell Program was also tested for specific gravity, absorption, and abrasion resistance (ASTM C535). Larger pieces of the caprock stockpiled as riprap were sent for sulfite soundness testing (ASTM C88).

The unconfined compressive strengths ranged from 433 to 9,768 pounds per square inch (psi) with an average of 2,928 psi. The bulk specific gravity ranged from 2.62 to 1.44 with an average of 2.25. The absorption ranged from 1.5 percent to 29.5 percent with an average of 6.1 percent. The losses on abrasion testing of three samples with "A" gradation were 31.3, 31.3, and 30.6 percent. The losses on soundness testing for three samples were 0 percent.

Three larger samples of caprock excavated for riprap during the Test Cell Program were selected from a stockpile and sent to the laboratory for specific gravity and absorption testing. The bulk specific gravities determined were 2.35, 2.4, and 2.35. The corresponding absorptions were 3.02, 3.12, and 2.93 percent, respectively.

It must be stressed that boring core recoveries in the caprock averaged less than 50 percent. These test results represent the high end of the caprock quality. The softer, less dense, and weaker rock was lost during the coring process or was retrieved in pieces too small for testing. Data from the testing is presented in Table 4-1.

Table 4-1 Caprock Laboratory Testing and Core Data

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0255	1-6	22	16			
CP05-EAARS-CB-0256	1-5.5	61	35	2.41	3.3	2600
CP05-EAARS-CB-0257	4.75-9.75	76	48	2.03	7.71	1250
CP05-EAARS-CB-0257	9.75-11.75	100	92			
CP05-EAARS-CB-0258	4.5-9.5	54	22			
CP05-EAARS-CB-0259	3-8	56	24	1.44	29.5	1430
CP05-EAARS-CB-0259	8-10	55	0			
CP05-EAARS-CB-0260	7-12	48	22			9768
CP05-EAARS-CB-0261	5.5-10.5	44	32	2.32	5.39	4340
CP05-EAARS-CB-0261	5.5-10.5	44	32			9768
CP05-EAARS-CB-0262	6.5-11.5	48	30	2.43	2.39	3690
CP05-EAARS-CB-0263	8.5-13.5	20	0			
CP05-EAARS-CB-0264	6.5-11.5	62	40	2.27	4.93	1530
CP05-EAARS-CB-0265	4.5-9.6	44	0			
CP05-EAARS-CB-0266	1-4	17	0			
CP05-EAARS-CB-0267	6-9.5	54	53	2.32	5.35	
CP05-EAARS-CB-0268	2-7	50	24			
CP05-EAARS-CB-0269	2.5-7.5	36	28	2.52	3.1	1570
CP05-EAARS-CB-0270	3.5-8.3	26	22	2.35	3.32	1860
CP05-EAARS-CB-0271	3.5-6.5	48	45	2.62	2.1	4620
CP05-EAARS-CB-0271	6.5-10.5	25	9			
CP05-EAARS-CB-0272	0.1-5.1	46	14	2.4	4.65	2650
CP05-EAARS-CB-0273	4.5-9.5	54	30	2.14	4.73	3090
CP05-EAARS-CB-0274	9.3-12	33	15	2.26	4.1	433
CP05-EAARS-CB-0274	18-22	63	0			
CP05-EAARS-CB-0275	0.5-5.5	67	24	2.4	4.44	1676
CP05-EAARS-CB-0276	1-4.5	21	13	2.24	4.7	
CP05-EAARS-CB-0277	1.5-6.5	13	0			
CP05-EAARS-CB-0278	3.5-8.5	41	7			
CP05-EAARS-CB-0279	4-9	35	18	2.22	6.7	1870
CP05-EAARS-CB-0280	2-7	18	18			
CP05-EAARS-CB-0281	8-13	0	0			
CP05-EAARS-CB-0287	1-6	36	18	2	10.97	1105
CP05-EAARS-CB-0288	1-6	73	52	2.33	5.4	650
CP05-EAARS-CB-0289	1-6	42	14			
CP05-EAARS-CB-0289	5.5-10.5	68	38			
CP05-EAARS-CB-0290	4-9	60	24			
CP05-EAARS-CB-0290	9-14	54	24			874
CP05-EAARS-CB-0290	6-11	60	45			
CP05-EAARS-CB-0291	11-16	5	0			
CP05-EAARS-CB-0292	7-12	56	19			
CP05-EAARS-CB-0293	6-8.5	80	35			
CP05-EAARS-CB-0293	8.5-13.5	92	55			
CP05-EAARS-CB-0293	13.5-17.5	30	10			
CP05-EAARS-CB-0294	6-11	54	8			
CP05-EAARS-CB-0295	6-11	80	40			
CP05-EAARS-CB-0295	11-16	60	23			
CP05-EAARS-CB-0296	7-12	42	8			

Table 4-1 Continued - Caprock Laboratory Testing and Core Data

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0297	4.5-9.5	80	50			
CP05-EAARS-CB-0297	9.5-14.5	66	31			
CP05-EAARS-CB-0298	5.5-7.5	100	38			
CP05-EAARS-CB-0298	8-13	74	46			
CP05-EAARS-CB-0298	13-17	44	16			
CP05-EAARS-CB-0299	8-13	62	13			
CP05-EAARS-CB-0300	6-11	62	24	2.31	7.96	
CP05-EAARS-CB-0301	7-12	95	85			
CP05-EAARS-CB-0301	12-17	34	10			
CP05-EAARS-CB-0302	6-11	46	28			
CP05-EAARS-CB-0302	11-16	48	25			
CP05-EAARS-CB-0303	6-10	85	78			
CP05-EAARS-CB-0303	10-15	65	52	2.05	10.43	
CP05-EAARS-CB-0303	15-18	37	28			
CP05-EAARS-CB-0304	8-9.5	67	29			
CP05-EAARS-CB-0304	9.5-14.5	60	43			
CP05-EAARS-CB-0305	0-5	22	0			
CP05-EAARS-CB-0305	5-10	8	0			
CP05-EAARS-CB-0306	6-8.3	100	82			
CP05-EAARS-CB-0306	8.3-11	93	63	2.47	2.69	8080
CP05-EAARS-CB-0306	11-14	60	27			
CP05-EAARS-CB-0306	14-17	42	28			
CP05-EAARS-CB-0307	5.5-10.5	90	68			
CP05-EAARS-CB-0307	10.5-15.5	78	42			
CP05-EAARS-CB-0308	5.5-10	45	30			
CP05-EAARS-CB-0308	10-15	46	8			
CP05-EAARS-CB-0309	5-10	58	32	2.46	1.83	5200
CP05-EAARS-CB-0309	11-16	22	0			
CP05-EAARS-CB-0310	4.5-8.5	50	0			
CP05-EAARS-CB-0310	8.5-9.5	100	0			
CP05-EAARS-CB-0310	10-15	20	14	1.74	8.41	2710
CP05-EAARS-CB-0311	3.5-8.5	28	0			
CP05-EAARS-CB-0311	8.5-13.5	14	10			
CP05-EAARS-CB-0312	4.5-8.5	38	0			
CP05-EAARS-CB-0312	8.5-13.5	8	0			
CP05-EAARS-CB-0313	1-6	26	0			
CP05-EAARS-CB-0313	6-11	24	0			
CP05-EAARS-CB-0314	4-8.5	22	0			
CP05-EAARS-CB-0314	8.8-13.5	12	0			
CP05-EAARS-CB-0316	5-10	38	30			
CP05-EAARS-CB-0317	5.5-7	83	70			
CP05-EAARS-CB-0318	5-10	50	32			
CP05-EAARS-CB-0319	3.5-8.5	45	22			
CP05-EAARS-CB-0319	8.5-13.5	97	0			
CP05-EAARS-CB-0320	5-10	45	17			
CP05-EAARS-CB-0320	10-14	32	21			
CP05-EAARS-CB-0321	5.5-11.5	8	8			
CP05-EAARS-CB-0322	8-13	48	22			

Table 4-1 Continued - Caprock Laboratory Testing and Core Data

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0323	4-9	60	38			
CP05-EAARS-CB-0323	9-14	28	20			
CP05-EAARS-CB-0324	4.75-9.75	70	44	2.34	4.35	
CP05-EAARS-CB-0324	9.75-14.75	10	0			
CP05-EAARS-CB-0325	5.75-10.75	96	36	2.4	3.27	
CP05-EAARS-CB-0326	6.5-11.5	48	34	2.204	7.11	
CP05-EAARS-CB-0326	11.5-14	36	0			
CP05-EAARS-CB-0327	4-9	78	56	2.16	6.53	
CP05-EAARS-CB-0327	9-12	26	0			
CP05-EAARS-CB-0329	2-7	46	12			1867
CP05-EAARS-CB-0330	1-6	54	7			
CP05-EAARS-CB-0331	2.5-7.5	70	15	2.31	4	
CP05-EAARS-CB-0331	8-13	6	0			
CP05-EAARS-CB-0332	3-8	36	0			
CP05-EAARS-CB-0333	3.5-8.5	20	0			
CP05-EAARS-CB-0334	2.25-7.25	20	0			
CP05-EAARS-CB-0335	0.9-4.9	40	0			
CP05-EAARS-CB-0336	0.9-5.9	30	0			
CP05-EAARS-CB-0337	1.5-6.5	56	0			
CP05-EAARS-CB-0337	6.5-11.5	26	0			
CP05-EAARS-CB-0338	2.5-7.5	46	8			
CP05-EAARS-CB-0339	1.5-6.5	18	7			
CP05-EAARS-CB-0340	1.1-6.1	24	0			
CP05-EAARS-CB-0341	1.5-6.5	46	14			
CP05-EAARS-CB-0341	6.5-11.5	24	18			
CP05-EAARS-CB-0342	2-7	46	22			
CP05-EAARS-CB-0343	4-9	32	0			
CP05-EAARS-CB-0344	0.8-5.8	34	0			
CP05-EAARS-CB-0345	4-9	20	0			
CP05-EAARS-CB-0345	9-14	10	0			
CP05-EAARS-CB-0346	0.1-5.1	12	0			
CP05-EAARS-CB-0346	5.1-10.1	40	24			
CP05-EAARS-CB-0347	2-6	85	43			
CP05-EAARS-CB-0347	6-11	42	10			
CP05-EAARS-CB-0348	1.1-6.1	40	0			
CP05-EAARS-CB-0349	4-9	40	0			
CP05-EAARS-CB-0350	3.5-8.5	34	12			
CP05-EAARS-CB-0350	7.5-12.5	8	8			
CP05-EAARS-CB-0351	2-7	20	0			
CP05-EAARS-CB-0351	7-12	22	8			
CP05-EAARS-CB-0352	5.5-10.5	56	35			
CP05-EAARS-CB-0353	3-7.5	56	34			
CP05-EAARS-CB-0354	2.5-7.5	30	10			
CP05-EAARS-CB-0355	4.5-8.5	32	12			
CP05-EAARS-CB-0356	1-6	94	42			
CP05-EAARS-CB-0356	7-12	30	15			
CP05-EAARS-CB-0357	1.2-6.5	35	8			
CP05-EAARS-CB-0358	2-7	64	43			
CP05-EAARS-CB-0358	8.5-13	30	22			

Table 4-1 Continued - Caprock Laboratory Testing and Core Data

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0359	3.5-8.5	36	10			
CP05-EAARS-CB-0360	3.5-8.5	35	9			
CP05-EAARS-CB-0361	1.5-6.5	50	16			
CP05-EAARS-CB-0362	3.5-7.5	12	0			
CP05-EAARS-CB-0363	3-8	68	34			
CP05-EAARS-CB-0363	8-13	14	9			
CP05-EAARS-CB-0364	1.5-6.5	42	8			
CP05-EAARS-CB-0364	7.5-12.5	42	21			
CP05-EAARS-CB-0365	6.5-11.5	68	50			
CP05-EAARS-CB-0366	4-9	52	26			
CP05-EAARS-CB-0366	9-14	10	9			
CP05-EAARS-CB-0367	2-7	22	7			
CP05-EAARS-CB-0367	7-12	22	0			
CP05-EAARS-CB-0368	0.25-5.25	36	10			
CP05-EAARS-CB-0369	2-7	28	0			
CP05-EAARS-CB-0370	0.9-5.6	7	0			
CP05-EAARS-CB-0370	5.6-10.6	24	10			
CP05-EAARS-CB-0371	1.3-6.3	42	12			
CP05-EAARS-CB-0372	4-9	65	45			
CP05-EAARS-CB-0372	10-14	20	0			
CP05-EAARS-CB-0373	4.5-9.5	80	54			
CP05-EAARS-CB-0373	9.5-14.5	26	17			
CP05-EAARS-CB-0374	5.5-10.5	53	26			
CP05-EAARS-CB-0374	10.5-15.5	10	0			
CP05-EAARS-CB-0375	4.5-9.5	58	28			
CP05-EAARS-CB-0376	4.5-9.5	73	73			
CP05-EAARS-CB-0377	5.5-10.5	60	47			
CP05-EAARS-CB-0377	10.5-15.5	40	20			
CP05-EAARS-CB-0378	6-11	64	35			
CP05-EAARS-CB-0379	1.5-6.5	16	0			
CP05-EAARS-CB-0379	7-12	54	8			
CP05-EAARS-CB-0380	5.5-10	88	20			
CP05-EAARS-CB-0380	10-12	88	50			
CP05-EAARS-CB-0381	1-5	38	0			
CP05-EAARS-CB-0381	5-10	1	0			
CP05-EAARS-CB-0382	5.5-10	5	0			
CP05-EAARS-CB-0382	10-15	30	26			
CP05-EAARS-CB-0383	1.5-6.5	38	20			
CP05-EAARS-CB-0383	6.5-11.5	0	0			
CP05-EAARS-CB-0384	2-7	24	10			
CP05-EAARS-CB-0384	7-12	24	0			
CP05-EAARS-CB-0385	2-7	16	0			
CP05-EAARS-CB-0385	7-12	2	0			
CP05-EAARS-CB-0386	1.1-6.1	36	7			
CP05-EAARS-CB-0387	2-7	28	8			
CP05-EAARS-CB-0387	7-12	12	0			
CP05-EAARS-CB-0388	0-5	38	13			2119
CP05-EAARS-CB-0388	5-10	24	14			
CP05-EAARS-CB-0389	3-8	42	28			

Table 4-1 Continued - Caprock Laboratory Testing and Core Data

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0389	8-13	0	0			
CP05-EAARS-CB-0390	0.5-5.5	68	20			
CP05-EAARS-CB-0390	5.5-10.5	12	0			
CP05-EAARS-CB-0391	5.5-10.5	40	20			
CP05-EAARS-CB-0392	0-5	48	30			1805
CP05-EAARS-CB-0392	5-10	0	0			
CP05-EAARS-CB-0393	0-5	40	22			
CP05-EAARS-CB-0393	5-10	6	0			
CP05-EAARS-CB-0394	2-7	50	15			
CP05-EAARS-CB-0394	7-12	38	15			
CP05-EAARS-CB-0395	8-13	36	10			
CP05-EAARS-CB-0395	13-18	18	13			
CP05-EAARS-CB-0396	3-8	80	28			
CP05-EAARS-CB-0397	2-7	24	8			
CP05-EAARS-CB-0397	7-12	6	0			
CP05-EAARS-CB-0398	5-7	25	0			
CP05-EAARS-CB-0398	7-12	60	45			
CP05-EAARS-CB-0398	12-17	29	19			
CP05-EAARS-CB-0399	6-9	67	19			
CP05-EAARS-CB-0399	9-13	31	13			
CP05-EAARS-CB-0400	3-9	40	0			
CP05-EAARS-CB-0401	5-10	10	0			
CP05-EAARS-CB-0402	5.3-10	44	32			
CP05-EAARS-CB-0402	10-15	10	0			
CP05-EAARS-CB-0403	5-10	55	25			
CP05-EAARS-CB-0404	1.5-6.5	42	28			
CP05-EAARS-CB-0404	6.5-11.5	6	0			
CP05-EAARS-CB-0405	4-9	45	13			
CP05-EAARS-CB-0405	9-14	34	9			
CP05-EAARS-CB-0406	0-5	46	30			
CP05-EAARS-CB-0406	5-10	52	35			
CP05-EAARS-CB-0407	5.5-10.5	50	18			
CP05-EAARS-CB-0416	12-17	62	49			

RQD = Rock Quality Designation as a percentage
UCS = Unconfined Compressive Strength in pounds per square inch (psi)

4.2.2 Fort Thompson Sand

The silty sand below the caprock is composed primarily of calcite grains. The carbonate content test was determined in accordance with the Florida Department of Transportation (FDOT) test procedure. Results ranged from 76.6 percent to 91.9 percent with an average of 83.6 percent carbonate content. The grains are platy and angular and many, when viewed with a magnifier, have a fluted surface on one of the plate sides. Most if not all the sand grains appear to be shell fragments. One corrosivity test series (FDOT) was performed on sand from the Fort Thompson Formation (RB-0282, 5 to 10-foot depth):

- Electrical resistivity – 6,100 Ohm-cm

- pH – 8.9
- Chlorides – 90 parts per million (ppm)
- Sulfates – 60 ppm.

SPT samples were assigned group symbols in accordance with ASTM D2487. Samples tested (90 tests) were mostly SM (53) with some SW-SM (12), SP-SM (6), and GP-GM (4) and with occasional GM (3), SP (3), GW (1), GW-GM (2), CL-ML (2), ML (2), and SW (1). Percent passing the 200 sieve ranged from 2 to 53 percent with an average of 19.9 percent. Moisture content (ASTM D2216) ranged from 6 percent to 63 percent with an average of 22.7 percent. Hydrometer analyses (ASTM D422) on the fines content of the two samples tested indicate them to be mostly silt with clay content of 5.8 to 8.8 percent. (Table 4-3)

The gravel content of the samples included shell fragments and limestone chips. Densities ranged from loose to very dense. Samples with high gravel content, especially limestone chips, generally correlate with high SPT blow counts. Intervals of hard drilling as judged from drilling rate, drill vibration and drill bit chatter also correlate with high SPT blow counts and limestone gravel content.

Table 4-2 Fort Thompson Formation Laboratory Soil Testing

Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0168	5.5					87.4
CP05-EAARS-CB-0169	18.5		SP-SM	11.4		
CP05-EAARS-CB-0170	13.5		SM	28.1		
CP05-EAARS-CB-0170	8.5					82.6
CP05-EAARS-CB-0171	13.5		GM	20.1	5.8	
CP05-EAARS-CB-0171	6					87.7
CP05-EAARS-CB-0171	18.5					82.7
CP05-EAARS-CB-0172	8.5					86.2
CP05-EAARS-CB-0173	13.5		SM	39.8		
CP05-EAARS-CB-0173	6					84.7
CP05-EAARS-CB-0174	6					83
CP05-EAARS-CB-0174	18.5					84.8
CP05-EAARS-CB-0175	28.5		SM	12.2		
CP05-EAARS-CB-0175	8.5					85.9
CP05-EAARS-CB-0175	13.5					83.7
CP05-EAARS-CB-0176	13.5		SM	29		
CP05-EAARS-CB-0176	23.5					78.5
CP05-EAARS-CB-0177	13.5					83.5
CP05-EAARS-CB-0179	8.3		SM	22.1		
CP05-EAARS-CB-0180	13.5		SM	26.6		
CP05-EAARS-CB-0181	6.5		SM	22.1	8.8	
CP05-EAARS-CB-0183	18.5		SM	13.1		
CP05-EAARS-CB-0183	8	17.2				
CP05-EAARS-CB-0186	23.5	26.2				
CP05-EAARS-CB-0187	18.5		SM	44.9		
CP05-EAARS-CB-0188	9					87.3
CP05-EAARS-CB-0189	5.5	15	SM	22		

Table 4-2 Continued - Fort Thompson Formation Laboratory Soil Testing						
Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0189	13.5	21	SM	25		
CP05-EAARS-CB-0189	8.5					79
CP05-EAARS-CB-0190	13.5	26	SM	23		
CP05-EAARS-CB-0190	18.5					91.9
CP05-EAARS-CB-0191	13.5	21	SM	25		
CP05-EAARS-CB-0191	18.5					87.1
CP05-EAARS-CB-0192	18.5					80.6
CP05-EAARS-CB-0193	8.5		GM	13.6		
CP05-EAARS-CB-0193	28.5		GP-GM	7.3		
CP05-EAARS-CB-0193	11		GW-GM	5.5		
CP05-EAARS-CB-0193	13.5		GW-GM	10.8		
CP05-EAARS-CB-0193	5.5		SP	3.2		
CP05-EAARS-CB-0194	11					78.6
CP05-EAARS-CB-0195	8.5		SM	43		
CP05-EAARS-CB-0195	11					89.5
CP05-EAARS-CB-0255	9	33	SM	24		
CP05-EAARS-CB-0255	13.5	27	SM	32		
CP05-EAARS-CB-0255	18.5	19	SW-SM	11		
CP05-EAARS-CB-0256	14.5	63	GP-GM	12		
CP05-EAARS-CB-0256	21.5	21	SM	23		
CP05-EAARS-CB-0256	23.5	29	SM	19		
CP05-EAARS-CB-0266	11.5	24	SM	28		
CP05-EAARS-CB-0266	14.5	34	SM	14		
CP05-EAARS-CB-0266	16	36	SM	25		
CP05-EAARS-CB-0266	20.5	28	SM	27		
CP05-EAARS-CB-0266	5.5	13	SW-SM	8		76.6
CP05-EAARS-CB-0266	26.5	22	SW-SM	13		
CP05-EAARS-CB-0268	18.5	22	GP-GM	9		
CP05-EAARS-CB-0268	13.5	30	SM	27		
CP05-EAARS-CB-0268	7					81.6
CP05-EAARS-CB-0269	13.5	32	SM	25		
CP05-EAARS-CB-0269	8.5	24	SW-SM	12		
CP05-EAARS-CB-0269	18.5	23	SW-SM	10		
CP05-EAARS-CB-0270	13.5	36	SW	35		
CP05-EAARS-CB-0270	18.5	26	SW-SM	11		
CP05-EAARS-CB-0271	10.5	24	SM	18		
CP05-EAARS-CB-0271	18.5	25	SM	25		
CP05-EAARS-CB-0271	23.5	22	SW-SM	12		
CP05-EAARS-CB-0271	13.5					81.8
CP05-EAARS-CB-0272	5.1	19	SM	15		
CP05-EAARS-CB-0272	10	29	SM	24		
CP05-EAARS-CB-0272	18.5	11	SW-SM	9		
CP05-EAARS-CB-0272	23.5	15	SW-SM	7		
CP05-EAARS-CB-0275	7.5	25	SM	17		
CP05-EAARS-CB-0275	13.5	18	SM	19		
CP05-EAARS-CB-0275	5.5	24	SW-SM	10		
CP05-EAARS-CB-0275	23.5	14	SW-SM	5		
CP05-EAARS-CB-0276	13.5	25	SM	13		
CP05-EAARS-CB-0276	23.5	25	SP	4		

Table 4-2 Continued - Fort Thompson Formation Laboratory Soil Testing						
Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0276	18.5	26	SP-SM	9		
CP05-EAARS-CB-0276	8	17	SW-SM	12		
CP05-EAARS-CB-0277	23.5	25	SM	16		
CP05-EAARS-CB-0278	18.5	21	SM	14		
CP05-EAARS-CB-0278	23.5	24	SM	19		
CP05-EAARS-CB-0280	7	18	GW	2		
CP05-EAARS-CB-0317	14	23	ML	52		
CP05-EAARS-CB-0326	14	23	SP-SM	11		
CP05-EAARS-CB-0329	8.5	17	SM	14		
CP05-EAARS-CB-0329	13.5	22	SM	14		
CP05-EAARS-CB-0329	18.5	13	SP-SM	12		
CP05-EAARS-CB-0333	8.5	24	SM	24		
CP05-EAARS-CB-0346	10	10	SP-SM	9		
CP05-EAARS-CB-0358	13	21	SM	20		
CP05-EAARS-CB-0360	8.5	26	GP-GM	8		
CP05-EAARS-CB-0360	13.5	31	SM	46		
CP05-EAARS-CB-0360	18.5	24	SM	32		
CP05-EAARS-CB-0365	11.5	29	SM	19		
CP05-EAARS-CB-0365	18.5	23	SM	41		
CP05-EAARS-CB-0365	23.5	23	SM	36		
CP05-EAARS-CB-0372	14.5	19	ML	53		
CP05-EAARS-CB-0373	19	25	SM	21		
CP05-EAARS-CB-0373	29	22	SM	19		
CP05-EAARS-CB-0377	15.5	18	SM	19		
CP05-EAARS-CB-0377	19	26	SM	25		
CP05-EAARS-CB-0377	24	19	SM	18		
CP05-EAARS-CB-0377	29	15	SM	17		
CP05-EAARS-CB-0406	23.5	26	SM	28		
CP05-EAARS-RB-0282	5	6	GM	14		
CP05-EAARS-RB-0282	10	21	SM	27		
CP05-EAARS-RB-0282	15	20	SM			
CP05-EAARS-RB-0283	5	10	CL-ML	39		
CP05-EAARS-RB-0283	10	23	CL-ML	41		
CP05-EAARS-RB-0284	10	18	SM	26		
CP05-EAARS-RB-0284	20	26	SP	4		
CP05-EAARS-RB-0286	15	18	SM	20		

4.2.3 Lower Fort Thompson Limestone

A cemented zone often occurs along the base of the Fort Thompson Formation or along the contact between the Fort Thompson Formation and the underlying Caloosahatchee or Pinecrest Sand. The cemented zone forms a limestone layer varying from 1 to 6-feet thick, and the top was penetrated between 19 and 39-foot depth in the borings around the perimeter of the EAA Reservoir A-1, primarily on the northern, eastern, and southern sides. It was only found north of boring CB-0280 on the western side of the EAA Reservoir A-1. It was deepest along the southern half of the eastern side and shallower to the north or along the south side. No attempt was made to trace it into the proposed EAA Reservoir A-1 interior.

For the most part, the limestone ranges from soft and weak to moderately hard, moderately strong and porous, consisting of sand sized grains cemented only at the contacts. Thin, strong, hard, dense beds are found within the interval, all less than one foot thick. Some of the intervals near the bottom contain fine, subrounded, quartz sand similar to that in the underlying Caloosahatchee or Pinecrest Sand Member.

Attempts to core this lower limestone were made in 28 borings. Core recoveries ranged from 0 to 100 percent with an average of 45 percent. RQD ranged from 0 to 64 percent with an average of 18.5 percent. Selected samples were pulled from the core runs, wrapped for protection and sent to a laboratory for specific gravity and absorption (ASTM D6473), and unconfined compressive strength testing (ASTM D2938). Specific gravity ranged from 1.5 to 2.96 with an average of 2.17. Absorption ranged from 2.05 to 15.1 percent and averaged 8.05 percent. Unconfined compressive strength ranged from 960 to 5,920 psi and averaged 2,780 psi. Again as with the caprock, it must be emphasized that because of the large core sample losses these results probably represent the upper limits of the true range. (Table 4-3)

Table 4-3 Limestone Laboratory Testing and Core Data in the Fort Thompson Below Caprock

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0168	23.5-28.5	26	16			
CP05-EAARS-CB-0170	25-29	22	13			
CP05-EAARS-CB-0287	25-30	84	62	2.47	2.05	2400
CP05-EAARS-CB-0289	15-20	0	0			
CP05-EAARS-CB-0289	20.5-25.5	57	14	2.46	3.56	
CP05-EAARS-CB-0290	23.5-28.5	0	0			
CP05-EAARS-CB-0290	34-39	28	14	2.31	5.26	2215
CP05-EAARS-CB-0291	23.5-28.5	15	0			
CP05-EAARS-CB-0291	36-40	65	17			
CP05-EAARS-CB-0293	37-42	92	47	2.14	9.02	1053
CP05-EAARS-CB-0304	14.5-19.5	36	12			
CP05-EAARS-CB-0304	19.5-23.5	15	0			
CP05-EAARS-CB-0310	30-35	56	24	2.96	6.1	5920
CP05-EAARS-CB-0311	13.5-18.5	10	0			
CP05-EAARS-CB-0311	23.5-28.5	72	18	1.91	13.28	
CP05-EAARS-CB-0312	23.5-28.5	40	0			
CP05-EAARS-CB-0312	28.5-33.5	66	14	1.501	7.38	
CP05-EAARS-CB-0312	33.5-36.5	33	0			
CP05-EAARS-CB-0313	25-30	68	52			
CP05-EAARS-CB-0314	25-30	60	48			2979
CP05-EAARS-CB-0314	30-35	96	64			4916
CP05-EAARS-CB-0316	21.5-25	56	28			
CP05-EAARS-CB-0316	25-30	76	49			
CP05-EAARS-CB-0318	19-25	100	46	1.93	15.1	960
CP05-EAARS-CB-0318	25-30	100	53.5	2.19	7.85	3095
CP05-EAARS-CB-0320	15-20	90	46			1481
CP05-EAARS-CB-0323	16-21	74	40			
CP05-EAARS-CB-0323	21-23.75	40	0			
CP05-EAARS-CB-0323	23.75-28.5	8	0			
CP05-EAARS-CB-0324	16-21	82	56	2.39	2.9	
CP05-EAARS-CB-0324	21-26	32	8			

Table 4-3 Continued - Limestone Laboratory Testing and Core Data in the Fort Thompson Below the Caprock

Boring Number	Run Depth (feet)	Core Recovery (percent)	RQD (percent)	Bulk Specific Gravity	Absorption (percent)	UCS (psi)
CP05-EAARS-CB-0326	17.5-22.5	80	52	2.01	11	
CP05-EAARS-CB-0326	22.5-27.5	36	0			
CP05-EAARS-CB-0327	18-23	78	28	1.901	9.63	
CP05-EAARS-CB-0327	23-28	44	16	1.97	11.57	
CP05-EAARS-CB-0330	10-15	12	0			
CP05-EAARS-CB-0330	19-24	34	0			
CP05-EAARS-CB-0332	15-20	24	0			
CP05-EAARS-CB-0332	23.5-28.5	48	12			
CP05-EAARS-CB-0333	22-27	10	6			
CP05-EAARS-CB-0341	21.5-26.5	26	0			
CP05-EAARS-CB-0341	26.5-31.5	42	8			
CP05-EAARS-CB-0341	31.5-36.5	40	0			
CP05-EAARS-CB-0395	30-35	29	13			
CP05-EAARS-CB-0395	35-40	40	24			
CP05-EAARS-CB-0396	25-30	11	0			
CP05-EAARS-CB-0396	30-35	26	10			
CP05-EAARS-CB-0400	9-15	45	0			
CP05-EAARS-CB-0400	15-20	80	25			
CP05-EAARS-CB-0400	20-25	20	0			
CP05-EAARS-CB-0405	25-30	10	0			
CP05-EAARS-CB-0405	30-35	0	0			
CP05-EAARS-CB-0407	28.5-33.5	38	14			
CP05-EAARS-CB-0407	33.5-38.5	74	48			

4.2.4 Caloosahatchee Formation and Pinecrest Sand

Below the Fort Thompson Formation the borings penetrated shelly, fine, uniform, subrounded, quartz sand with local cemented zones. In the rotosonic drilled borings, the cemented zones were recovered as gravel sized aggregates of the sand and shell fragments. The sand belongs to the Caloosahatchee Formation and/or the Pinecrest Sand Member of the Tamiami Formation that cannot be differentiated as noted above. The top of the sand in the recovered samples ranged from 18.5 to 43.5 feet and averaged 29 feet. Borings generally between about 30 and 50-foot deep ended in the sand. Only the borings of 100-foot depth or deeper penetrated into the underlying Ochopee Limestone Member of the Tamiami Formation. Along the eastern end of the south side of the EAA Reservoir A-1, borings CB-0267 through CB-0270 and CB-0283 penetrated a layer of silty sand near the base of the Tamiami Formation.

Densities ranged from loose to very dense. Samples sent for laboratory testing were classified as per USCS as mostly SP-SM (43), SM (23), and SW-SM (15) and occasionally SP (8), GP-GM (5), GP (1), and GM (1). Percent passing the 200 sieve ranged from 1 to 39.5 percent with an average of 10.7 percent. Moisture content and carbonate content ranged from 2 to 30 percent and 10.9 to 77.1 percent, averaging 21.3 percent and 36.1 percent, respectively. The clay content from hydrometer testing ranged from 1.4 to 6.6 percent with an average of 3.4 percent. (Table 4-4)

Table 4-4 Caloosahatchee and Pinecrest Sand Laboratory Soil Testing

Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0168	48.5		SP-SM	7.5		
CP05-EAARS-CB-0168	28.5					29.1
CP05-EAARS-CB-0168	43.5					10.9
CP05-EAARS-CB-0170	48.5		SM	21.9	3.6	
CP05-EAARS-CB-0170	29					40.5
CP05-EAARS-CB-0170	43.5					37.3
CP05-EAARS-CB-0171	48.5		SP-SM	6.4		
CP05-EAARS-CB-0171	33.5					31.4
CP05-EAARS-CB-0172	28.5		SP-SM	11.4		36.8
CP05-EAARS-CB-0172	38.5					31.4
CP05-EAARS-CB-0173	28.5					27.6
CP05-EAARS-CB-0173	48.5					34.6
CP05-EAARS-CB-0174	43.5		SP-SM	8.4		
CP05-EAARS-CB-0174	38.5					28.5
CP05-EAARS-CB-0175	38.5					32
CP05-EAARS-CB-0176	43.5		SM	39.5	6.6	
CP05-EAARS-CB-0176	38.5					25.3
CP05-EAARS-CB-0177	33.5					26.7
CP05-EAARS-CB-0178	48.5		SP-SM	10.4	1.9	
CP05-EAARS-CB-0178	38.5	24.5				
CP05-EAARS-CB-0181	48.5	26.8				
CP05-EAARS-CB-0182	48.5		SM	13.2		
CP05-EAARS-CB-0183	28.5		SP-SM	9.2	1.4	
CP05-EAARS-CB-0184	28.5		SP-SM	9.5		
CP05-EAARS-CB-0185	43.5		SM	28		
CP05-EAARS-CB-0185	53.5	17	SM	14		
CP05-EAARS-CB-0185	58.5	25	SM	15		
CP05-EAARS-CB-0189	53.5	15	GM	13		
CP05-EAARS-CB-0189	33.5	26	SP-SM	6		
CP05-EAARS-CB-0189	58.5					63.2
CP05-EAARS-CB-0189	28.5					14.5
CP05-EAARS-CB-0189	63.5					41.6
CP05-EAARS-CB-0190	48.5	26	SM	15		
CP05-EAARS-CB-0190	33.5					56.5
CP05-EAARS-CB-0191	48.5		SM			
CP05-EAARS-CB-0191	33.5	20	SP-SM	6		
CP05-EAARS-CB-0191	38.5					40.7
CP05-EAARS-CB-0191	43.5					25.3
CP05-EAARS-CB-0192	48.5		GP-GM	7.9		
CP05-EAARS-CB-0192	28.5		SP-SM	10		
CP05-EAARS-CB-0193	68.5		GP-GM	6.4		
CP05-EAARS-CB-0193	58.5		SM	16.2		
CP05-EAARS-CB-0193	33.5		SP	4.3		
CP05-EAARS-CB-0193	38.5		SP-SM	8.8		
CP05-EAARS-CB-0193	63.5		SW-SM	10.8		
CP05-EAARS-CB-0194	33.5		SM	14.4		23.3
CP05-EAARS-CB-0195	43.5		SM	16.3		
CP05-EAARS-CB-0195	53.5		SW-SM	9.6		

Table 4-4 Continued - Caloosahatchee and Pinecrest Sand Laboratory Soil Testing

Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0256	38.5	28	SM	22		
CP05-EAARS-CB-0256	44.5	29	SP-SM	8		
CP05-EAARS-CB-0256	55	23	SP-SM	8		
CP05-EAARS-CB-0256	50.5	19	SW-SM	10		
CP05-EAARS-CB-0266	31	22	SM	25		
CP05-EAARS-CB-0266	55	30	SM	22		
CP05-EAARS-CB-0266	44.5	25	SP	3		
CP05-EAARS-CB-0266	37	27	SW-SM	9		
CP05-EAARS-CB-0266	49	21	SW-SM	7		
CP05-EAARS-CB-0266	61	30	SW-SM	11		
CP05-EAARS-CB-0266	65.5	22	SW-SM	9		
CP05-EAARS-CB-0266	68.5	22	SW-SM	8		
CP05-EAARS-CB-0268	78.5	26	SM	39		
CP05-EAARS-CB-0268	33.5	18	SW-SM	9		
CP05-EAARS-CB-0269	33.5	16	SP	3		
CP05-EAARS-CB-0269	38.5	21	SW-SM	6		
CP05-EAARS-CB-0271	38.5	24	SP-SM	10		
CP05-EAARS-CB-0272	28.5	29	SP	5		
CP05-EAARS-CB-0272	58.5	21	SP-SM	5		
CP05-EAARS-CB-0272	33.5	16	SW-SM	5		
CP05-EAARS-CB-0275	28.5	15	SP-SM	7		
CP05-EAARS-CB-0275	33.5	25	SP-SM	7		
CP05-EAARS-CB-0275	38.5	21	SP-SM	4		
CP05-EAARS-CB-0275	48.5	21	SP-SM	6		
CP05-EAARS-CB-0275	73.5	22	SP-SM	10		
CP05-EAARS-CB-0275	58.5	23	SW-SM	9		
CP05-EAARS-CB-0275	63.5	28	SW-SM	7		
CP05-EAARS-CB-0276	28.5	27	SP-SM	6		
CP05-EAARS-CB-0276	33.5	27	SP-SM	9		
CP05-EAARS-CB-0277	28.5	24	SM	13		
CP05-EAARS-CB-0277	33.5	30	SM	16		
CP05-EAARS-CB-0278	33.5	24	SP-SM	6		
CP05-EAARS-CB-0278	28.5	12	SW-SM	9		
CP05-EAARS-CB-0280	28.5	13	GP-GM	9		
CP05-EAARS-CB-0280	33.5	28	SM	15		
CP05-EAARS-CB-0280	38.5	24	SP-SM	11		
CP05-EAARS-CB-0280	43.5	25	SP-SM	11		
CP05-EAARS-CB-0280	53.5	23	SP-SM	10		
CP05-EAARS-CB-0280	68.5	23	SP-SM	10		
CP05-EAARS-CB-0280	48.5	29	SW-SM	8		
CP05-EAARS-CB-0281	33.5					34.7
CP05-EAARS-CB-0317	34	25	SP-SM	12		
CP05-EAARS-CB-0329	23.5	26	SP-SM	6		
CP05-EAARS-CB-0329	33.5	16	SP-SM	8		
CP05-EAARS-CB-0360	23.5	22	SM	15		
CP05-EAARS-CB-0365	28.5	21	SM	31		
CP05-EAARS-CB-0365	33.5	13	SP-SM	11		
CP05-EAARS-CB-0373	34	26	SP	5		

Table 4-4 Continued - Caloosahatchee and Pinecrest Sand Laboratory Soil Testing

Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0406	33.5	13	SP-SM	13		
CP05-EAARS-RB-0282	30	8	SM	17		
CP05-EAARS-RB-0282	45	14	SP	2		
CP05-EAARS-RB-0282	60		SP-SM	8		
CP05-EAARS-RB-0283	40	17	SP-SM	6		
CP05-EAARS-RB-0283	45		GP-GM	6		
CP05-EAARS-RB-0283	60	8	SP-SM	8		
CP05-EAARS-RB-0283	70		SP-SM	15		
CP05-EAARS-RB-0284	40	2	GP	4		
CP05-EAARS-RB-0284	45		GP-GM	6		
CP05-EAARS-RB-0284	55	16	SP-SM	9		
CP05-EAARS-RB-0285	40		SP-SM	11		
CP05-EAARS-RB-0285	45		SP-SM	7		
CP05-EAARS-RB-0286	30	16	SP-SM	6		
CP05-EAARS-RB-0286	65	21	SM	16		
CP05-EAARS-RB-0286	35	24	SP-SM	5		
CP05-EAARS-RB-0286	40		SP	1		
CP05-EAARS-RB-0286	45		SP	3		
CP05-EAARS-RB-0286	50		SM	18		
CP05-EAARS-RB-0286	60	14	SP-SM	11		77.1

4.2.5 Ochopee Limestone

The top of the Ochopee Limestone Member of the Tamiami Formation was penetrated by the 100-foot long borings, and the total thickness was penetrated by the rotosonic drilled borings. The top of the Ochopee Limestone, as judged from the topmost SPT samples recovered and from the top in the rotosonic drilled borings, ranged from 63.5 to 89.3-foot depth, with an average of 74 feet. It averaged about 90 feet in the rotosonic drilled borings. In the borings, the Ochopee Limestone consisted of variable proportions of fine, subrounded quartz sand and fine to medium, angular to subrounded calcitic sand. Gravel sized aggregate clasts of the sand are common especially in the rotosonic drilled borings.

Density in the Ochopee Limestone as judged by SPT blow counts to 100-foot depth was mostly medium dense to dense with lesser instances of very dense zones, or refusal on apparently hard, cemented zones. Samples sent for laboratory testing were were classified as per USCS as mostly SP-SM (38), SM (24), and SW-SM (17) with a few GP-GM (4) and GW-GM (2). Percent passing the 200 sieve ranged from 7 to 30 percent with an average of 11.7 percent. Moisture content and carbonate content ranged from 7 to 28 percent and 32.8 to 78.8 percent, averaging 18.5 percent and 65.8 percent, respectively. (Table 4-5).

Table 4-5 Ochopee Limestone Laboratory Soil Testing

Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-CB-0189	68.5	18	GW-GM	11		
CP05-EAARS-CB-0189	88.5	25	SM	17		
CP05-EAARS-CB-0189	73.5	24	SP-SM	8		
CP05-EAARS-CB-0189	83.5	22	SP-SM	10		
CP05-EAARS-CB-0189	78.5					45.9
CP05-EAARS-CB-0189	73.5					69.1
CP05-EAARS-CB-0190	93.5	22	SM	14		
CP05-EAARS-CB-0190	68.5	19	SP-SM	12		
CP05-EAARS-CB-0190	78.5	22	SP-SM	12		
CP05-EAARS-CB-0190	73.5					65
CP05-EAARS-CB-0190	98.5					67.7
CP05-EAARS-CB-0191	68.5	20	SM	13		
CP05-EAARS-CB-0191	93.5	23	SM	12		
CP05-EAARS-CB-0191	73.5					68.9
CP05-EAARS-CB-0191	78.5					67.8
CP05-EAARS-CB-0192	78.5		SW-SM	9.2		
CP05-EAARS-CB-0194	83.5		SM	16.2		
CP05-EAARS-CB-0194	73.5		SP-SM	8.9		
CP05-EAARS-CB-0194	53.5		SW-SM	8.9		
CP05-EAARS-CB-0195	78.5		SP-SM	9.3		
CP05-EAARS-CB-0195	83.5		SW-SM	9.7		
CP05-EAARS-CB-0256	91	21	SM	17		
CP05-EAARS-CB-0256	95.5	19	SM	20		
CP05-EAARS-CB-0256	98.5	22	SM	20		
CP05-EAARS-CB-0256	70	28	SP-SM	13		
CP05-EAARS-CB-0256	76	28	SP-SM	11		
CP05-EAARS-CB-0256	80.5	26	SP-SM	10		
CP05-EAARS-CB-0256	65.5	21	SW-SM	14		
CP05-EAARS-CB-0256	85	26	SW-SM	10		
CP05-EAARS-CB-0256	89.5	22	SW-SM	9		
CP05-EAARS-CB-0266	85	14	GW-GM	6		
CP05-EAARS-CB-0266	73	21	SW-SM	10		
CP05-EAARS-CB-0266	76	18	SW-SM	11		
CP05-EAARS-CB-0266	89.5	14	SW-SM	8		
CP05-EAARS-CB-0267	88.5	21	SM	29		
CP05-EAARS-CB-0275	83.5	20	SW-SM	11		
CP05-EAARS-CB-0275	93.5	18	SW-SM	12		
CP05-EAARS-CB-0280	73.5	26	SM	12		
CP05-EAARS-CB-0280	83.5	22	SM	19		
CP05-EAARS-CB-0280	88.5	23	SM	12		
CP05-EAARS-CB-0280	93.5	24	SM	15		
CP05-EAARS-CB-0280	78.5	19	SP-SM	8		
CP05-EAARS-CB-0280	98.5	24	SP-SM	11		
CP05-EAARS-RB-0282	70	7	GP-GM	7		72.3
CP05-EAARS-RB-0282	65	14	GP-GM	7		
CP05-EAARS-RB-0282	80		SP-SM	7		

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Table 4-5 Continued - Ochopee Limestone Laboratory Soil Testing						
Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
CP05-EAARS-RB-0282	85		SP-SM	8		
CP05-EAARS-RB-0282	115	20	SM	27		
CP05-EAARS-RB-0282	120	22	SM	26		
CP05-EAARS-RB-0282	125		SM	19		
CP05-EAARS-RB-0282	130	21	SM	25		32.8
CP05-EAARS-RB-0282	135	21	SM	21		
CP05-EAARS-RB-0282	150		SP-SM	7		
CP05-EAARS-RB-0282	155		GP-GM	6		
CP05-EAARS-RB-0282	95	22	SP-SM	6		
CP05-EAARS-RB-0282	145	13	SP-SM	11		
CP05-EAARS-RB-0283	75		SP-SM	8		
CP05-EAARS-RB-0283	110	18	SM	14		75.5
CP05-EAARS-RB-0283	155		SP-SM	11		
CP05-EAARS-RB-0283	100	11	SP-SM	9		71.7
CP05-EAARS-RB-0283	140	19	SP-SM	10		53
CP05-EAARS-RB-0283	115	16	SW-SM	12		75.9
CP05-EAARS-RB-0283	125	13	SW-SM	7		77.7
CP05-EAARS-RB-0283	150	13	SW-SM	8		68.3
CP05-EAARS-RB-0283	160	14	SW-SM	9		67.2
CP05-EAARS-RB-0284	100	11	GP-GM	6		
CP05-EAARS-RB-0284	120	13	SM	13		
CP05-EAARS-RB-0284	70	9	SP-SM	7		78.8
CP05-EAARS-RB-0284	75		SP-SM	6		
CP05-EAARS-RB-0284	90	15	SP-SM	7		72.1
CP05-EAARS-RB-0284	110		SP-SM	9		
CP05-EAARS-RB-0284	115		SM	13		
CP05-EAARS-RB-0284	125	10	SP-SM	8		
CP05-EAARS-RB-0284	140	9	SP-SM	7		55.4
CP05-EAARS-RB-0284	150		SP-SM	9		
CP05-EAARS-RB-0285	70		SM	13		
CP05-EAARS-RB-0285	75		SP-SM	11		
CP05-EAARS-RB-0285	110		SM	16		
CP05-EAARS-RB-0285	115		SP-SM	11		
CP05-EAARS-RB-0286	75	13	SM	13		72
CP05-EAARS-RB-0286	110	20	SM	30		
CP05-EAARS-RB-0286	70		SP-SM	11		
CP05-EAARS-RB-0286	80	12	SP-SM	7		
CP05-EAARS-RB-0286	95	17	SP-SM	8		
CP05-EAARS-RB-0286	105	14	SP-SM	7		
CP05-EAARS-RB-0286	115		SP-SM	10		
CP05-EAARS-RB-0286	125	17	SP-SM	12		
CP05-EAARS-RB-0286	140	15	SP-SM	7		58.2
CP05-EAARS-RB-0286	150		SP-SM	10		
CP05-EAARS-RB-0286	155		SP-SM	11		
CP05-EAARS-RB-0286	88.5	21	SW-SM	12		
CP05-EAARS-RB-0286	98.5	15	SW-SM	12		

4.2.6 Unnamed Sand Formation

The unnamed sand formation was encountered in the rotosonic drilled borings between the Ochopee Limestone and the Fort Pearce Formation It consists mostly of shelly, uniform, fine grained, subrounded quartz sand similar to that of the Pinecrest Sand Member, but it is silty. It is identified primarily by the yellow-gray color.

Samples sent for laboratory testing were assigned USCS classifications of SM (8), SP-SM (4), and CL-ML (1). Percent passing the 200 sieve ranged from 11 to 41 percent with an average of 24.4 percent. The moisture content on samples tested ranged between 12 percent and 21 percent and averaged 18.1 percent. Carbonate content ranged from 36.6 to 61.6 percent with an average of 47.6 percent. (Table 4-6)

Table 4-6 Laboratory Soil Testing for the Unnamed and Peace River Formations

Boring Number	Depth (feet)	Moisture (percent)	ASDM D2487 Class	-200 Sieve (percent)	Clay (percent)	CO_3 (percent)
Unnamed Formation						
CP05-EAARS-RB-0282	180	20	SM	20		54.5
CP05-EAARS-RB-0283	185	20	CL-ML	41		53.6
CP05-EAARS-RB-0283	165	20	SM	23		41.2
CP05-EAARS-RB-0283	180	20	SM	29		37.2
CP05-EAARS-RB-0283	195	17	SM	27		36.6
CP05-EAARS-RB-0284	175	17	SM	22		48.2
CP05-EAARS-RB-0284	185	15	SM	35		
CP05-EAARS-RB-0284	155	12	SP-SM	11	0	
CP05-EAARS-RB-0285	150	19	SM	22	0	
CP05-EAARS-RB-0285	155	18	SM	19	5	
CP05-EAARS-RB-0285	175	18	SM	41	7	
CP05-EAARS-RB-0285	190	28	SM	47		
CP05-EAARS-RB-0286	175	18	SM	19		
CP05-EAARS-RB-0286	180	21	SM	37		
CP05-EAARS-RB-0286	160	20	SP-SM	12		61.6
Peace River Formation						
CP05-EAARS-RB-0282	225	36	ML	75		
CP05-EAARS-RB-0282	200	20	SM	34		
CP05-EAARS-RB-0282	215	28	SM	29		
CP05-EAARS-RB-0283	200	25	SM	22		23.9
CP05-EAARS-RB-0283	205	26	SM	25		30.5
CP05-EAARS-RB-0284	225	75	ML	99		
CP05-EAARS-RB-0284	205	23	SM	23		
CP05-EAARS-RB-0284	210	26	SM	43		
CP05-EAARS-RB-0285	205	32	SM	39	13	
CP05-EAARS-RB-0285	210	34	SM	41	4	
CP05-EAARS-RB-0285	215	43	CL	71		
CP05-EAARS-RB-0285	215	43	MH	89	55	
CP05-EAARS-RB-0285	220	101	MH	98	88	
CP05-EAARS-RB-0285	220	88	CL	62		
CP05-EAARS-RB-0285	225	148	CH	86		
CP05-EAARS-RB-0285	245	151	MH	98	51	
CP05-EAARS-RB-0286	215	25	ML	53		
CP05-EAARS-RB-0286	195	19	SM	31		

4.2.7 Peace River Formation

The top of the Peace River Formation was penetrated in the rotosonic drilled borings and all ended in the formation The top of the formation ranged from 191 to 200-foot depth, and averaged 197 feet. In the borings, it mostly consisted of very fine, silty sand, grading to more finely grained with depth. Samples sent to the laboratory were USCS classified as SM (7), ML (3), CL (2), and CH (1). Percent passing the 200 sieve ranged from 22 to 99 percent with an average of 50.2 percent. Two carbonate content tests returned 23.9 to 30.5 percent. Moisture content ranged between 19 and 148 percent with an average of 44.8 percent. (Table 4-6)

4.3 HYDRAULIC INTERVAL TESTING RESULTS

At two of the locations (RB-0238 and RB-0286) the static water level below ground level was progressively lower as the hole was drilled deeper. At RB-0285 this trend was reversed. In RB-0284 the trend was for the water levels to lower with depth apart from the uppermost (40 to 50 feet) which was lower than the static water level at the 70 to 80-foot interval. At RB-0282 the levels were generally the same with depth until 155-160 feet where the static level was higher than the strata above.

The pH, temperature, and conductivity of effluent stream were generally checked twice during the pumping of each interval in borings RB-0284 and RB-0284, once about one-half way through pump testing and once near the end. The results of the chemistry monitoring are listed in Table 4-7.

Table 4-7 Groundwater Chemistry Monitoring Results

Interval Depth (feet)	Parameters	RB-0283		RB-0284	
		Early data	Late data	Early data	Late data
40-50	pH	7.63	7.43	6.6	7.3
	Temp °C	25.1	25.0	25.4	24.9
	Conductivity (microSiemens)	927	892	653	644
70-80	pH	7.43	7.39	7.28	7.41
	Temp °C	25.0	24.9	25.7	25.7
	Conductivity (microSiemens)	2410	2440	993	1017
110-120	pH	7.65	7.44	7.31	7.46
	Temp °C	24.8	24.9	25.3	25.2
	Conductivity (microSiemens)	2690	2680	4660	4700
150-160	pH	7.5	7.43	7.32	7.55
	Temp °C	25.1	24.9	25.3	25.1
	Conductivity (microSiemens)	4680	4700	7240	7290

The conductivity results indicate that the water quality decreases with depth in both boreholes from non brackish at the top to brackish at depth. This suggests that there is not much vertical movement and mixing of the groundwater.

Comparison of the same depth intervals between the two boreholes indicates that there are significant horizontal variations in quality.

4.3.1 Aquifer Responses

The pumping time/drawdown data have been analyzed using the Cooper-Jacob straight line method (semilog plot) and the Hantush curve matching method (log-log plot). Where the recovery data were suitable, they have been analyzed using the Cooper-Jacob straight line method. The units of transmissivity are feet squared per day (feet^2/day). Results are presented in Table 4-8 through Table 4-12.

There are large differences between the transmissivities determined for the pumping data by the semilog and log-log plot methods. The transmissivities determined with the semilog method are generally characteristic of the types of earth materials encountered. The transmissivities determined by the log-log method are too low for the types of earth materials encountered, and the data curves did not generally fit the type curve well. The transmissivities determined by the semilog method are more representative of the in situ materials.

Where available, the transmissivities determined from the recovery data generally are comparable to the transmissivities determined for the pumping data by the semilog method, just slightly higher. The drawdown in pumped wells is generally higher than the drawdown in the aquifer, so analyses of the data generally underestimates the transmissivity. The analysis of recovery data tends to mitigate the problem and thus gives results that are more representative of the aquifer characteristics. Where available, the transmissivities determined by the recovery analyses should be used, and the transmissivities determined from the pumping data by the semilog method should be used otherwise.

The results tabulated below include the pumping rates and the measured drawdowns at 30 minutes of pumping. Since the pumping rates for each interval were similar, the drawdowns are inversely related to the calculated transmissivities, and the greatest part of the total drawdown was achieved in the first 30 minutes of pumping in each interval. The total drawdown in RB-0285, 40 to 50 feet was less than 0.1 foot, too small to provide data suitable for analysis. No transmissivity is given for that interval. However, considering the small drawdown, the transmissivity is probably higher than that in RB-0283, 40 to 50 feet. The data for RB-0283, 40 to 50 feet, is also questionable because of the small drawdown, but the data at least shows an apparent linear trend. Both of these tests indicate high transmissivity intervals, but quantitative determinations cannot be made.

The complete pumping test data and analyses are contained in Appendix 4. It should be noted that a partial collapse often occurred in the open hole intervals during the pumping tests and was detected by measuring the hole depth again after the testing (see Table 4-8).

Table 4-8 Aquifer Characteristics for RB-0282

RB-0282 Interval Depth (feet)	Pumping rate (gpm) and duration (minutes)	Draw-down at 30 minutes of pumping (feet)	Recovery monitoring period (minutes)	Semilog plot (time vs. drawdown) (feet²/day)	Log – log plot (time vs. draw-down) (feet²/day)	(feet²/day)	Recovery Semilog plot (time vs. drawdown) (feet²/day)
60-70	18	2.44		C	L		
	90		14	5300	540		5765
80-90	18	0.29		C	L	U (early)	
	50		30	25500	1750	9900	Too fast
120-130	2.44	18.52		C	L		
	120		60	6.3	0.002		4.1
150-160	18	1		C	L		
	60		45	18500	930		9900

C = Confined or unconfined aquifer without delayed yield
L = Leaky confined
U = Unconfined aquifer with delayed yield
gpm = Gallons per minute
feet²/day = Transmissivity units in feet squared per day

Table 4-9 Aquifer Characteristics for RB-0283

RB-0283 Interval Depth (feet)	Pumping rate (gpm) and duration (minutes)	Draw-down at 30 minutes of pumping (feet)	Recovery monitoring period (minutes)	Semilog plot (time vs. drawdown) (feet²/day)	Log – log plot (time vs. draw-down) (feet²/day)	(feet²/day)	Recovery Semilog plot (time vs. drawdown) (feet²/day)
40-50	18.75	0.05		C	L		
	30		10	63200	5700		Too fast
70-80	18.5	2.28		C	L		
	75		30	7300	105		7200
110-120	19.5	3.8		C	L		
	70		30	5900	70		8600
150-160	18.5	2.61		C	L		
	65		30	6700	100		7250

C = Confined or unconfined aquifer without delayed yield
L = Leaky confined
U = Unconfined aquifer with delayed yield
gpm = Gallons per minute
feet²/day = Transmissivity units in feet squared per day

Table 4-10 Aquifer Characteristics for RB-0284

RB-0284 Interval Depth (feet)	Pumping rate (gpm) and duration (minutes)	Draw-down at 30 minutes of pumping (feet)	Recovery monitoring period (minutes)	Semilog plot (time vs. drawdown) (feet²/day)	Log – log plot (time vs. draw-down) (feet²/day)	(feet²/day)	Recovery Semilog plot (time vs. drawdown) (feet²/day)
40-50	18.5	0.105		C	L		
	30		10	Bad Data	8900		Too fast
70-80	18.5	0.65		C	L		
	60		30	27000	800		32500
110-120	18.5	1.74		C	L		
	30		10	14200	580		Too fast
150-160	18.5	2.67		C	L		
	60		30	10400	370		Too fast

C = Confined or unconfined aquifer without delayed yield
L = Leaky confined
U = Unconfined aquifer with delayed yield
gpm = Gallons per minute
feet²/day = Transmissivity units in feet squared per day

Table 4-11 Aquifer Characteristics for RB-0285

RB-0285 Interval Depth (feet)	Pumping rate (gpm) and duration (minutes)	Draw-down at 30 minutes of pumping (feet)	Recovery monitoring period (minutes)	Semilog plot (time vs. drawdown) (feet²/day)	Log – log plot (time vs. draw-down) (feet²/day)	(feet²/day)	Recovery Semilog plot (time vs. drawdown) (feet²/day)
40-50	Stepped	5.34					
	16 max		14				166
70-80	Stepped	12.07					
	15.6 (max)		14				56
110-120	20.5	1.08		C	L		
	60		14	20800	1800		Too fast
150-160	22.5	2.92		C	L		
	120		14	10800	400		10600

C = Confined or unconfined aquifer without delayed yield
L = Leaky confined
U = Unconfined aquifer with delayed yield
gpm = Gallons per minute
feet²/day = Transmissivity units in feet squared per day

Table 4-12 Aquifer Characteristics for RB-0286

RB-0286 Interval Depth (feet)	Pumping rate (gpm) and duration (minutes)	Draw-down at 30 minutes of pumping (feet)	Recovery monitoring period (minutes)	Semilog plot (time vs. drawdown) (feet^2/day)	Log – log plot (time vs. draw-down) (feet^2/day)	(feet^2/day)	Recovery Semilog plot (time vs. drawdown) (feet^2/day)
40-50	18	14.06		C	L		
	120		30	60	20		60
70-80	18	1.37		C	L	U (early)	
	75		30	2400	300	400	7050
110-120	18.75	4.31		C	L		
	75		30	4200	60		6606
150-160	18	0.91		C	L	U (early)	
	75		30	10400	280	50	12400

C = Confined or unconfined aquifer without delayed yield
L = Leaky confined
U = Unconfined aquifer with delayed yield
gpm = Gallons per minute
ft^2/day = Transmissivity units in feet squared per day

4.4 GROUNDWATER MONITORING RESULTS

The groundwater levels in the three piezometers installed during the summer 2005 drilling program were determined on November 22, 2005. The data are tabulated in Table 4-13. The depths are measured from the top of the flush mounted protective casing.

Table 4-13 Groundwater Depths

Boring	Interval Depth (feet)	Depth to Water (feet)
RB-0283	108 to 121.5	2.3
RB-0284	68 to 81	1.2
RB-0286	148 to 161	1.4

5.0 REFERENCES

5.0 REFERENCES

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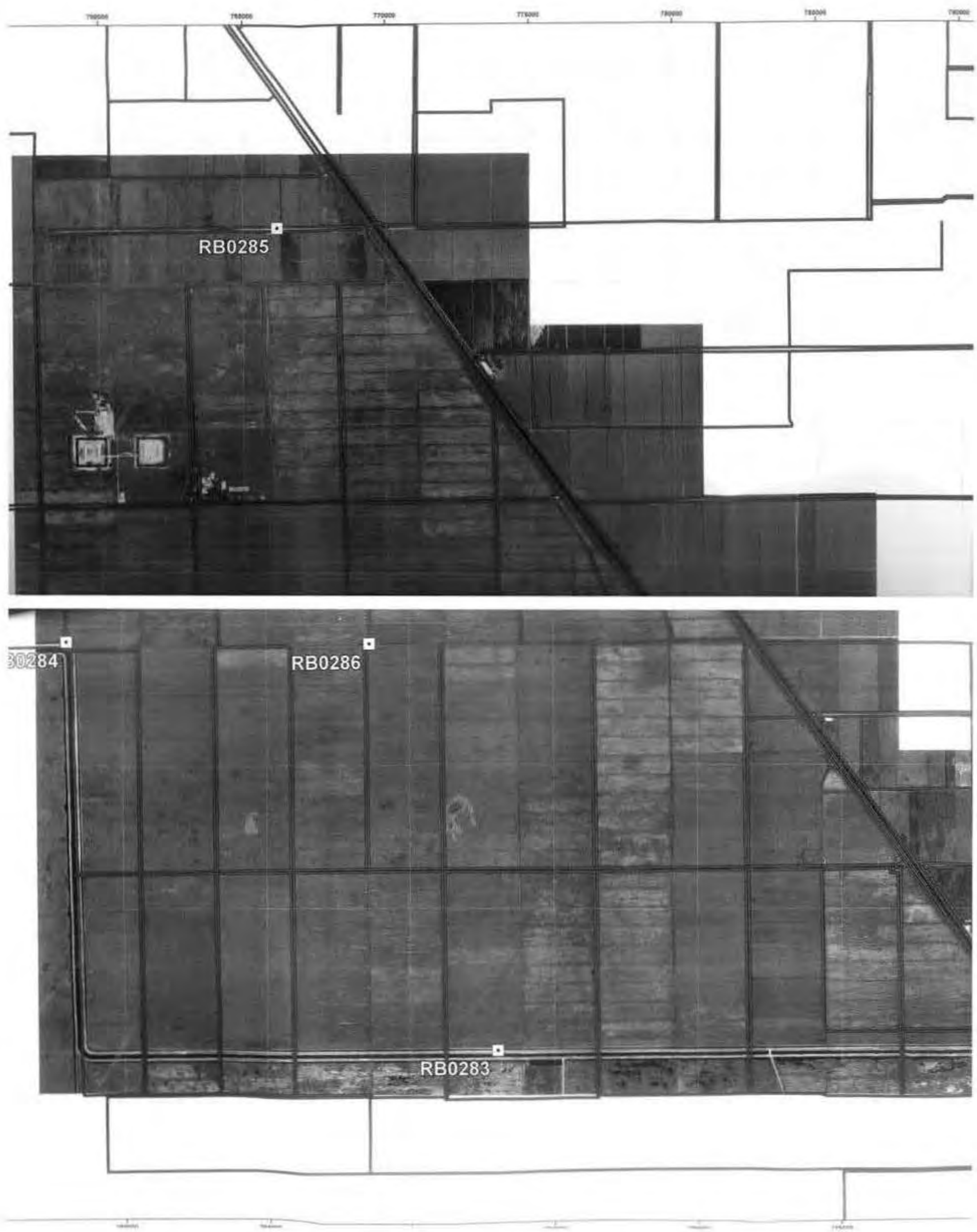
PLATE 1
EAA RESERVOIR A-1
BORING LOCATION PLAN


RB0285
RB0286
RB0283

N
W E
S

1,000 2,000 4,000
Feet

Legend
Hydraulic Interval Test Location
Roads

EAA RESER
HYDRAULIC I
TEST LOC.
Plate

BLACK & VEATCH
building a world of difference
WATER INFORMATION GOVERNMENT

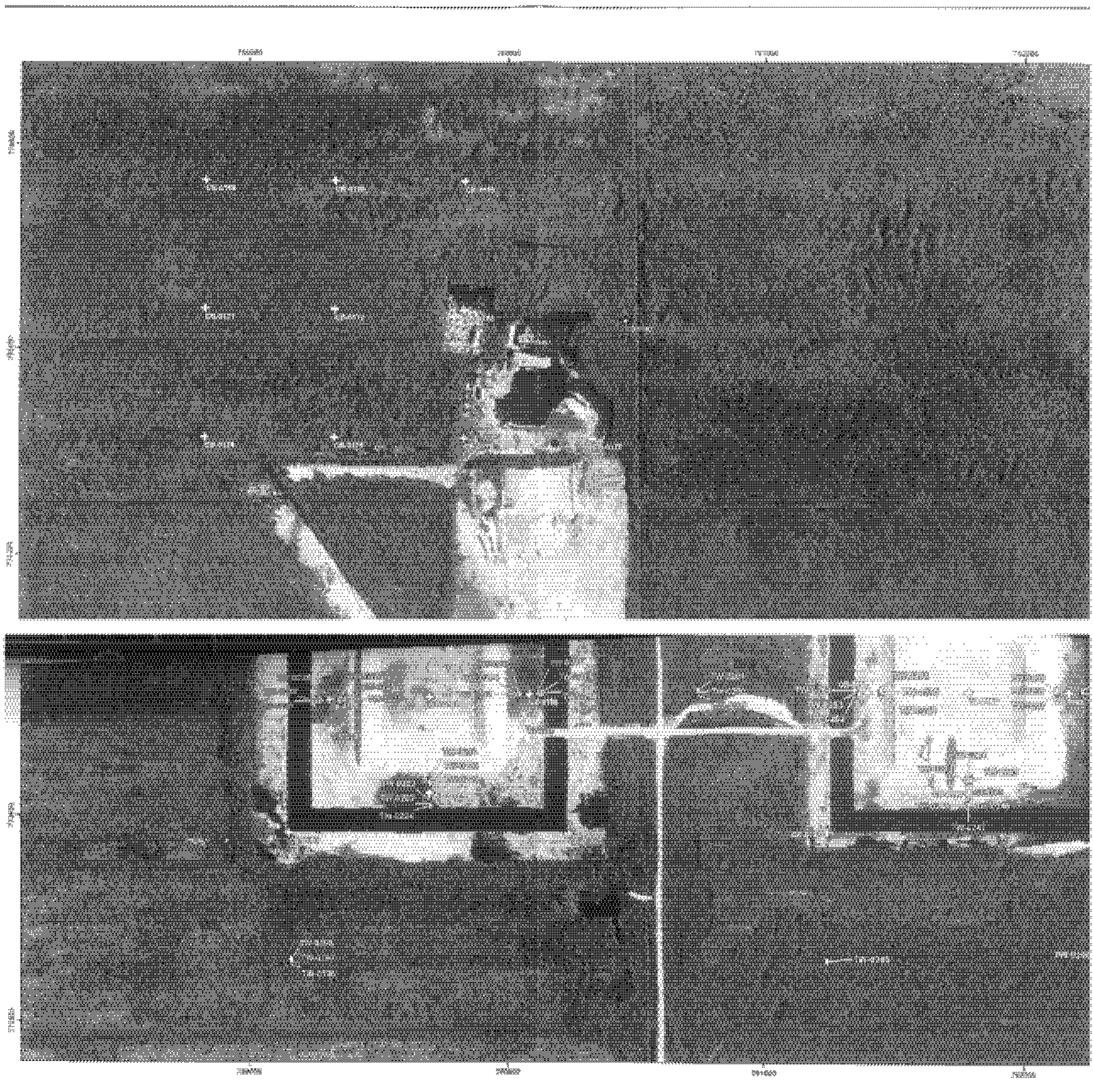
Boring ID	RB-0282	RB-0283	RB-0284	RB-0285	RB-0286
Interval Depth (feet)	60-70	40-50	40-50	40-50	40-50
	80-90	70-80	70-80	70-80	70-80
	120-130	110-120	110-120	110-120	110-120
	150-160	150-160	150-160	150-160	150-160

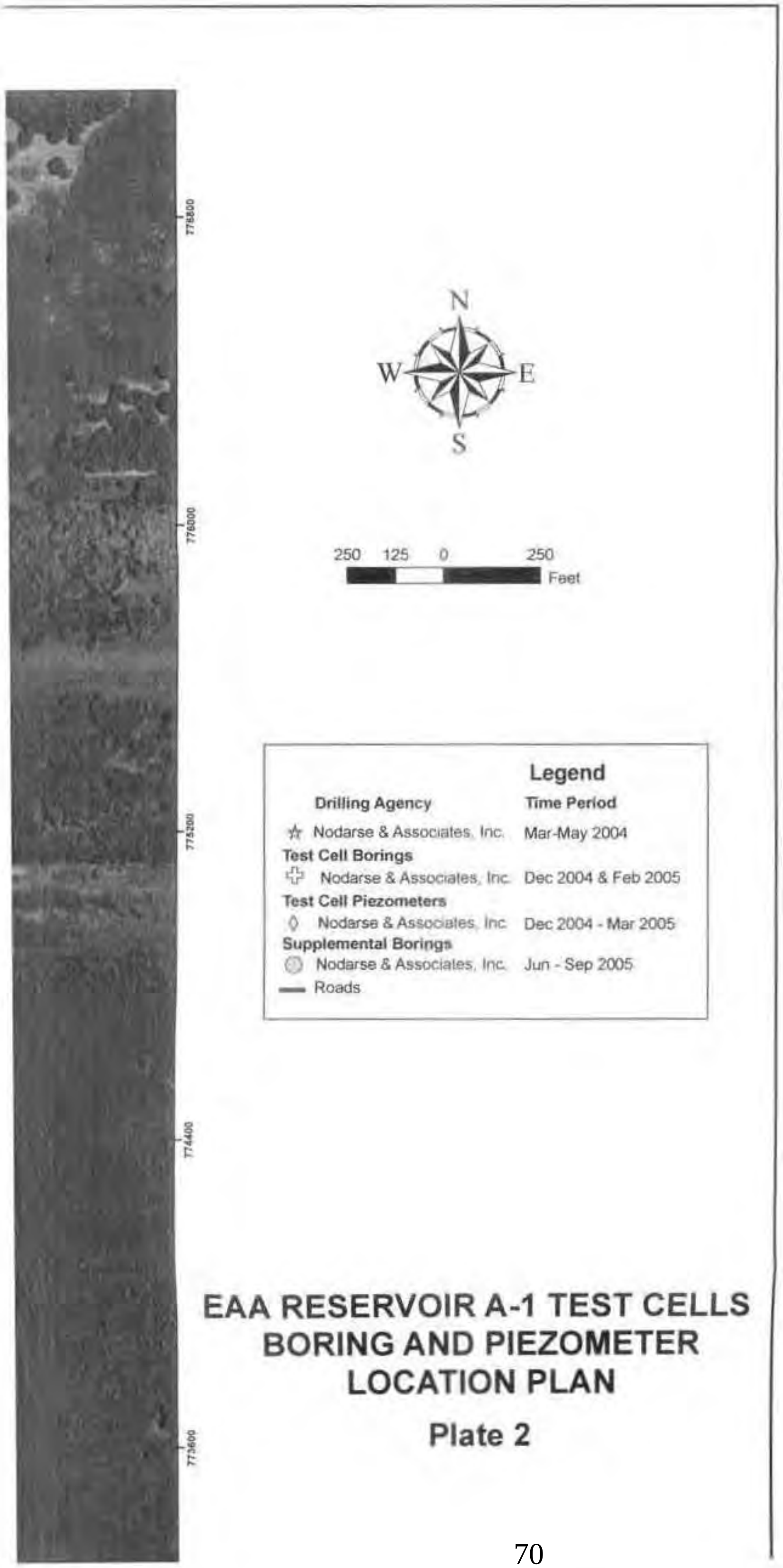
Note: Three borings (RB0283, RB0284, RB0286) had piezometers installed in them.

Project Name: EAA R
Client: South
Project location: Palm E
Created by: K. Rob
Date: 03/09C

PLATE 2
EAA RESERVOIR A-1 TEST CELLS BORING AND PIEZOMETER LOCATION PLAN

68





EAA RESERVOIR A-1 TEST CELLS BORING AND PIEZOMETER LOCATION PLAN

Plate 2

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PLATE 3
EAA RESERVOIR A-1 HYDRAULIC INTERVAL TEST LOCATIONS

APPENDIX 1

APPENDIX 1
TEST CELL BORINGS AND PIEZOMETER INSTALLATION LOGS: 168-180

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Hole No. CP05-EAARS-CB-0168

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N776662.9, E758833.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0168		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/7/2004 Completed 12/7/2004	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT, Dark Brown				
	0.5		LIMESTONE, White, Moderatley Weathered, extremely strong, hard	REC=50 RQD=22	1	Drilled with a hand sampler to 6". Start core run time: 8:300am. End time: 9:10am (0.5'-5.5')	
	5.5		Calcareous Sandy GRAVEL; white, medium to very dense, wet, poorly graded, subangular with silt		1	CO3=87.4%	9, 18, 7
					2		50/5"
					3		5, 4, 3

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0168

Hole No. CP05-EAARS-CB-0168

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Calcareous Silty SAND; white, very dense, wet, poorly graded, subangular with shell fragments		4		50/6"
	23.5		LIMESTONE (Shell Hash) and calcareous silty sand as above		5	Installed casing to 25 feet for core run. Core run 23.5' to 28.5'	50/2"
				REC=27 RQD=15	2		
					6	CO3=29.1%	10 10 11
	30.0		Calcareous silty SAND; light gray, very stiff, wet, fine grained, poorly graded, with shell fragments				

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0168

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Hole No: CP05-EAARS-CB-0168

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Sandy GRAVEL; dark gray, medium dense, wet, poorly graded subangular		7		8 8 7
	38.5		Silty SAND; greenish gray, loose to medium dense, wet, fine-grained, uniform, subrounded, calcareous, with shell fragments		8		8 4 4
	43.0		same as above		9	CO3=10.9%	5 12 16
	48.5		same as above		10	SAND with trace Silt and Gravel	7 8 9
	50.0		End of Boring at 50				

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

NOTES: (continued)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0168

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Hole No. CP05-EAARS-CB-0168

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0168

Hole No. CP05-EAARS-CB-0169

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N776662.9, E759333.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0169		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole: Started 12/7/2004, Completed 12/8/2004	
7. Thickness of Burden: 1.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT, Dark Brown			Drilled with a hand sampler to 1.5 ft bgs. Core run start = 4:55pm. Core run end = 5:15pm (1.5 ft. - 6.5 ft.)	
	1.5		LIMESTONE: White, slightly weathered, extremely strong, hard	REC=48 RQD=42	1		
	6.5		Silty SAND: light gray, medium dense, wet, medium grained, poorly graded, subangular, calcareous, with shells and weathered limestone fragments		1		5, 17, 6
	8.5		same as above		2		2, 3, 3
	13.5		same as above		3		3, 5, 7
	15.0						

(continued)

ENG FORM 1836	PROJECT: EAA Reservoir A-1	HOLE NUMBER: CP05-EAARS-CB-0169

Hole No. CP05-EAARS-CB-0169

DRILLING LOG (Cont. Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0		Silt Sand; Light gray, medium dense, wet, medium grained, poorly graded, subangular, calcareous, with shells and weathered limestone fragments				
					4	SAND with some Gravel and Silt	7 7 10
	20.0		Silt Sand; Light gray, medium dense, wet, medium grained, poorly graded, subangular, calcareous, with shells and weathered limestone fragments				
					5		24 50/3"
	25.0		Silt Sand; Light gray, medium dense, wet, medium grained, poorly graded, subangular, trace gravel, shell and limestone fragments				
						I think we hit shell hash again. Difficulty in drilling with rotary. Very slow penetration for 6" below SPT 5.	
					6		9 17 14
	30.0		Silty Sand; Light gray, dense, wet, medium grained, poorly graded, subangular, calcareous, shell and limestone fragments				

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0169

80

Hole No. CP05-EAARS-CB-0169

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
					7		9 16 12
	35.0		Silt Sand; Light gray, medium dense, moist, medium grained, poorly graded, subangular, calcareous, shell and limestone fragments				
					8		7 10 11
	40.0		Silt Sand; Light gray, medium dense, moist, medium grained, poorly graded, subangular, calcareous, shell and limestone fragments				
					9		5 6 9
	45.0		Silt Sand; Light gray, medium dense, moist, medium grained, poorly graded, subangular, calcareous, shell and limestone fragments				
	48.5		same as above		10		5 11 10
	50.0						
			End of Boring at 50'				

NOTES (continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0169

Hole No. CP05-EAARS-CB-0169

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0169

82

Hole No. CP05-EAARS-CB-0170

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N776162.9, E759833.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0170		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/8/2004 Completed 12/8/2004	
7. Thickness of Burden: 1.0 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark brown				
	1.0		LIMESTONE, light gray, slightly to moderately weathered, extremely strong, hard, vuggy			Drilled with hand sampler. Core run start = 10:00am. Core run finish = 10:14am	
				REC=50 RQD=28	1		
	6.0		Gravelly SAND; light, medium dense, wet, coarse grained, subangular, weathered limestone fragments		1		4 8 19
	8.5		Silty Sand Consolidated LIMESTONE; light gray, very dense, moist, medium grained, subangular, with shell fragments, calcareous		2	CO3=82.6%	2 25 50/2"
	14.0		Silty SAND; lighter gray, loose, moist, medium grained, subangular with shell fragments, calcareous		3	SAND with some Silt and trace Gravel	7 8 4

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0170

Hole No. CP05-EAARS-CB-0170

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of [illegible] Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0					Difficulty in drilling for 6'-12'. Possibly hit a limestone seam.	
	19.0		Silty SAND; light gray, medium dense, moist, medium grained, subangular with shell fragments, calcareous		4		7 7 13
	24.0		Silty SAND; light gray, very dense, moist, medium coarse grained, subangular, calcareous with shell fragments		5 6	Install casing to 25 ft deep. Core run start = 12:40. Core run end = 12:53 (25-29 ft), core penetrated only 4 ft; silt is clogging the barrel.	5 50/3" 50/0"
				REC=78 RQD=46	2		
	28.0		Shell hash; gray, dense at the top, porous towards the bottom				
	30.0		Silty SAND; gray, medium dense, moist, medium to coarse grained, subangular, calcareous, weathered limestone and shell fragments, trace gravel		7	CO3=40.3%	11 13 19

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0170

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Hole No. CP05-EAARS-CB-0170

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	34.0		Silty SAND; gray, medium dense, moist, medium to coarse grained, subangular, calcareous, weathered limestone and shell fragments, trace gravel		8		5 7 8
	39.0		Silty SAND; gray, loose, moist, medium grained, subangular, calcareous, weathered limestone and shell fragments		9		3 2 4
	44.0		Silty SAND; gray, loose, wet, fine grained, subrounded, calcareous with shell fragments		10	CO3=37.3%	3 4 4
	49.0 50.0		Silty SAND; greenishgray, loose, wet, fine grained, subrounded, calcareous with shell fragments		11	SAND with some Silt	1 2 5
			End of Boring at 50'			NOTES: (continued)	

34 36 38 40 42 44 46 48 50

ENG FORM 1836 | PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0170

Hole No. CP05-EAARS-CB-0170

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0170

Hole No. CP05-EAARS-CB-0171

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N776162.9, E758833.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0171		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/7/2004 Completed 12/7/2004	
7. Thickness of Burden: 1.0 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.2 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT, No sample			Gel-X drilling mud Double tube core barrel	
	1.0		LIMESTONE: tan to light yellowish brown, hard, strong, moderately weathered, vuggy	REC=53 RQD=31	1	Soft at 5.2 feet	
	6.2		Calcareous Silty SAND: light gray, loose to very dense, wet, fine to medium grained, poorly graded, subangular, with shell fragments and limestone seams		1	CO3=87.7% Manual Hammer	4 6 12
					2		5 3 3
					3		42 50/2"
	13.8		Silty SAND: light gray, medium dense to very dense, wet, fine to medium grained, poorly graded, subangular, shell fragments		4	Gravelly SAND with some Silt	6 8 24

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0171

Hole No. CP05-EAARS-CB-0171

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	19.0		Grades to shelly sand, medium dense		5	CO3=82.7%	4 8 20
	23.5		Grades to gravelly SAND, brown, very dense		6		18 50/2"
	28.5		SAND, tan medium dense, wet, fine grained, poorly graded, some silt, shell fragments		7		12 14 14

16 18 20 22 24 26 28 30 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0171

Hole No. CP05-EAARS-CB-0171

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4 / 33.5		Silty SAND; greenish gray, medium dense to dense, wet, fine grained, poorly graded, subrounded, with shell fragments, calcareous		8	CO3=31.4%	7, 8, 9
	38.5		same as above		9		8, 7, 9
	43.5		Grades to SAND; light greenish gray, dense, fine grained with shell fragments		10		10, 15, 20
					11	SAND with trace Silt and Gravel	12, 16, 17
	50.0		End of Boring at 50'				

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

NOTES

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0171

Hole No. CP05-EAARS-CB-0171

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8						
						1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0171

Hole No. CP05-EAARS-CB-0172

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N776162.9, E759333.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0172		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/7/2004 Completed 12/7/2004	
7. Thickness of Burden: 1.2 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 4.8 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		Peat, Dark Brown, fibrous, organic material			Started drilling at 2:20pm 13 minutes to core Gel-X mud	
	1.2		LIMESTONE; moderately to slightly weathered, hard, strong, light yellowish brown to white	REC=58 RQD=42	1		
	6.0		Calcareous SAND and cemented sandstone, tan, with shells, very dense		1		6 50/5"
	8.5		Calcareous Silty SAND and limestone, light gray, loose		2		5 3 3
	13.5		Calcareous Silty SAND: with shells, light gray, poorly sorted, fine-grained, loose		3		4 4 3

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0172

91

Hole No. CP05-EAARS-CB-0172

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Grades medium dense		4		12 14 8
					5		12 22 50/1"
	24.5		Gravelly SAND; calcareous, brown, very dense				
	26.0		Shelly Calcareous Silty SAND, light gray to tan, fine grained, poorly sorted, dense				
					6		20 15 16

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0172

92

Hole No. CP05-EAARS-CB-0172

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Grades light greenish gray, with silt, medium dense		7		7 10 11
	38.5		Grades with shells		8		10 12 14
					9		6 6 5
	50.0				10		8 9 10
			End of Boring at 50'				

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

NOTES: (continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0172

93

Hole No. CP05-EAARS-CB-0172

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0172

Hole No. CP05-EAARS-CB-0173

DRILLING LOG	Division	Installation	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N776162.9, E759833.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0173		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/8/2004 Completed 12/8/2004	
7. Thickness of Burden: 1.0 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark brown				
	1.0		LIMESTONE; gray at the top, white towards bottom, moderately weathered at the top, slightly weathered at the bottom, hard	REC=35 RQD=22	1	Core run starts=3:18pm. Core run end=3:25pm (1-6ft.)	
	6.0		Silty SAND; white, loose, wet, medium grained, poorly graded, subangular, trace gravel with shell and weathered limestone fragments, calcareous		1	CO3=84.7%	8 5 4
	8.5		Silty SAND (Consolidated Limestone); white, very dense, wet, medium grained, poorly graded, subangular with shell fragments, calcareous		2		2 3 50
	10.0		Silty SAND; white, loose, wet, fine grained, poorly graded, subangular with shell fragments, calcareous		3	Silty SAND with trace Gravel	3 6 4
	15.0						

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0173

95

Hole No. CP05-EAARS-CB-0173

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0		Silty SAND; gray, medium dense, wet, medium grained, poorly graded, subangular, calcareous with shell fragments				
	18.5		Silty SAND; gray, medium dense, wet, medium grained, poorly graded, subangular, calcareous with shell fragments		4		5 11 9
	23.5		Silty SAND; very dense, wet, fine grained, poorly graded, subangular, calcareous with shell fragments		5	35 Blows counts for last 1" of penetration. Probably hit shell hash. Very slow penetration with rotary drill	6 17 41
	28.5		Silty SAND, medium dense, moist, fine grained, poorly graded, subangular, calcareous with shellfragments		6	CO3=27.6%	17 18 12

16 18 20 22 24 26 28 30 32

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0173

Hole No. CP05-EAARS-CB-0173

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: Not Surveyed — Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 — Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Silty SAND; gray, medium dense, wet, fine grained, poorly graded, subangular, calcareous with shell fragments		7		6 10 10
	38.5		Silty SAND; gray, loose, wet, fine grained, poorly graded, subangular, calcareous with shell fragments, some gravel		8		6 5 5
	43.5		Silty SAND; greenish gray, medium dense, fine grained, poorly graded, subrounded, calcareous with trace shell fragments		8		4 6 5
	48.5		Silty SAND; greenish gray, loose, fine grained, poorly graded, subrounded, calcareous, trace shell fragments		10	CO3=34.6%	2 2 5
	50.0		End of Boring at 50'				

PROJECT: EAA Reservoir A-1 — HOLE NUMBER: CP05-EAARS-CB-0173

97

Hole No. CP05-EAARS-CB-0173

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0173

Hole No. CP05-EAARS-CB-0174

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N775862.9, E758833.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0174		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/9/2004 Completed 12/9/2004	
7. Thickness of Burden: 1.0 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark brown			Drilled with hand sampler. Core run start =8:36am. Core run end=8:49am (1-6ft.)	
	1.0		LIMESTONE; gray, moderately weathered, vuggy and with shells, seams in yellow color, hard	REC=32 RQD=7	1		
	6.0		Calcareous Silty SAND; white dense, wet, fine to medium grained, poorly graded, subangular, trace gravel with shell fragments		1	CO3=83%	3 3 29
	8.5		Calcareous Silty SAND; white to light gray, wet, fine to medium grained, poorly graded, subangular, trace gravel with shell fragments		2		23 40 17
	15.0		Calcareous Silty SAND; white to gray, dense, wet, medium grained, poorly graded, subangular, trace gravel with shell fragments		3	Difficulty in drilling, slow penetration	4 5 33

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0174

Hole No. CP05-EAARS-CB-0174

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Calcareous Silty SAND; gray, very dense, wet, medium grained, sample cemented on the bottom graded		4	CO3=84.8%	4 49 44
	23.5		Sandy GRAVEL; gray, dense, wet, poorly graded, subangular, shell fragments		5	Dril 24.0' and try spoon again to judge the material type. Difficulty in drilling	50/2" 28
					6		27 14
	28.5		Calcareous Silty SAND; white, medium, wet, poorly graded, subangular with shell fragments, some gravel		7		15 13 12

(continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0174

100

Hole No. CP05-EAARS-CB-0174

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4 / 33.5		Calcareous Silty SAND; white to gray, dense, medium , wet, fine grained, poorly graded, subangular, shell fragments		8		9, 10, 11
	38.5		Silty SAND; white, gray, medium dense, wet, fine grained, poorly graded, subrounded with shell fragments, calcareous		9	CO3=28.5%	3, 8, 8
	43.5		Silty SAND; white, gray, medium dense, wet, fine grained, poorly graded, subrounded with shell fragments, calcareous		10	SAND with some Gravel and trace Silt	10, 13, 14
	48.5		Calcareous Silty SAND, gray, medium dense, wet, medium grained, poorly graded, subrounded with shell fragments		11		8, 8, 7
	50.0		End of Boring at 50'				

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

NOTES (continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0174

101

Hole No. CP05-EAARS-CB-0174

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0174

Hole No. CP05-EAARS-CB-0175

DRILLING LOG	Division	Installation	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N775662.9, E759333.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0175		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/9/2004 Completed 12/9/2004	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0						
	0.5		PEAT; Dark brown				
	5.5		LIMESTONE, yellowish gray at top, gray at the middle and white at the bottom, vuggy, hard, moderately weathered at the top to slightly weathered at the bottom	REC=67 RQD=52	1	Drilled with hand sampler. Core run start=1:17pm. Core run end=1:32pm (0.5-5.5ft.)	
	8.5		Calcareous Silty SAND; white, medium dense, wet, fine grained, poorly graded, subangualer, shell fragments, some gravel		1		4 5 7
	13.5		Calcareous Silty SAND; white, loose, wet, fine grained, poorly graded, subangular, shell fragments, trace gravel, bottom 5" is plastic silty SAND, gray, fine grained		2	CO3=85.9%	2 6 3
			Calcareous Silty SAND; white, dense, wet, fine grained, poorly graded, subangular, shell fragments, some gravel		3	CO3=83.7%	3 3 30

(continued)

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0175

Hole No. CP05-EAARS-CB-0175

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Calcareous Silty SAND; white, medium dense, wet, fine grained, subangular, shell fragments		4		5 10 8
						Hit 4" thick hard layer at 20.5'-slow drilling rate	
	23.5		Calcareous Silty SAND; white, very dense, wet, fine grained, subangular, shell fragments, trace gravel		5		7 49 50/2"
						24.5' to 26.0' Slow drilling rate, hard layer, except 4" of soft zone	
	28.5		Calcareous Silty SAND; white, very dense, wet, fine grained, subangular, shell fragments, trace gravel		6	SAND with some Gravel and Silt	7 11 50/2"

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0175

104

Hole No. CP05-EAARS-CB-0175

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4 / 33.5		Silty SAND; gray, medium dense, wet, fine grained, subangular, poorly graded, subrounded, shell fragments		7		6 / 13 / 7
	38.5		Silty SAND; gray, medium dense, wet, fine grained, subangular, poorly graded, subrounded, shell fragments		8		12 / 11 / 8
	43.5		Silty SAND; gray, medium dense, moist, fine grained, poorly graded, subrounded, shell fragments		9		6 / 8 / 10
	48.5		Silty SAND; gray, medium dense, moist, fine grained, poorly graded, subrounded, shell fragments		10		8 / 8 / 8
	50.0		End of Boring at 50'				

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

NOTES (continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0175

Hole No. CP05-EAARS-CB-0175

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed		Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1		Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0175

Hole No. CP05-EAARS-CB-0176

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N775662.9, E759833.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0176		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/10/2004 Completed 12/10/2004	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark brown				
	0.5		LIMESTONE; yellowish gray at the top, gray in the middle and white at the bottom, moderately weathered at the top to slightly weathered at the bottom, hard vuggy	REC=70 RQD=52	1	Drilled with hand sampler. Core run start=8:27am. core run end=8:43am(0.5'-5.5')	
	5.5		Calcareous Silty SAND; white, medium dense, wet, fine grained, poorly graded, subangular, trace gravel, shell fragments		1		4 6 9
	8.5		Calcareous Silty SAND; white, very loose, wet, fine grained, poorly graded, subangular, trace gravel, shell fragments		2		1 2 2
	13.5		Calcareous Silty SAND; gray at the top to white towards the bottom, medium dense, wet, fine grained, poorly graded subangular, shell fragments		3		5 5 4

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0176

Hole No. CP05-EAARS-CB-0176

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0					16.0-16.5ft. hard material-slow penetration with drilling	
	18.5		Calcareous Silty SAND; gray at the top to white towards the bottom, medium dense, wet, fine grained, poorly graded, subangualr, shell fragments		4		16 15 14
	23.5		Calcareous Silty SAND; white, medium, wet, fined grained, poorly graded, subangular, shell fragments		5	25.5'-3"hard layer-difficulty in drilling	8 12 9
	28.5		Sandy GRAVEL, white to gray, wet, poorly graded, subangualer, shell fragments		6		49 18 24

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0176

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Hole No. CP05-EAARS-CB-0176

DRILLING LOG (Cont Sheet) Elevation Top of Hole: Not Surveyed Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4 / 33.5		Silty SAND; gray, medium dense, wet, fine grained, poorly graded, subrounded, shell fragments		7		5, 9, 10
	38.5		Silty SAND; gray, medium dense, wet, fine grained, poorly graded, subrounded, shell fragments, trace gravel		8		6, 7, 9
	43.5		Silty SAND; gray, loose, wet, fine grained, poorly graded, subrounded, shell fragments		9		3, 3, 4
	48.5		Silty SAND; greenish gray, loose, wet, fine grained, pooorly graded, subrounded, shell fragments, low plasticity		10		3, 3, 5
	50.0		End of Boring at 50'				

NOTES: (continued)

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PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0176

Hole No. CP05-EAARS-CB-0176

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0176

Hole No. CP05-EAARS-CB-0177

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N775662.9, E760333.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0177		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/10/2004 Completed 12/10/2004	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark Brown				
	0.5		LIMESTONE, yellowish gray to gray at the top and the middle white at the bottom, moderately weathered at the top to slightly weathered to slightly weathered at the bottom, vuggy	REC=40 RQD=30	1	Drilled with hand sampler. Core run start=11:55am Core run end=12:00pm	
	5.5		Sandy GRAVEL; white, loose, wet, poorly graded, subangualr, shell fragments		1		4 4 5
	8.5		Silty SAND; white, medium dense, wet, poorly graded, subangular, shell fragments, medium grained		2		2 14 15
	13.5		Silty SAND; white, dense, wet, poorly graded, fine grained, subangular, shell fragments		3		4 8 35

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0177

Hole No. CP05-EAARS-CB-0177

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Silty SAND; white, medium dense, wet, poorly graded, fine grained, subangular, shell fragments		4	Limestone seam 0.75" thick	10 10 11
	23.5		Silty SAND; white to gray, very dense, wet, poorly graded, medium grained subangular, shell fragments, trace gravel		5	1.5" thick limestone seam	4 21 50/2"
						25.5-3"thick hard layer, difficulty in drilling	
	28.5		Silty SAND; white, very dense, wet, poorly graded, medium grained, subangular, shell fragments, some gravel		6	27.5'-6" thick hard layer, difficulty in drilling	19 27 16

16 18 20 22 24 26 28 30 32

(continued)

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0177

Hole No. CP05-EAARS-CB-0177

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Silty SAND; gray, medium dense, wet, poorly graded, subrounded, fine grained, shell fragments		7		5 11 9
	38.5		Gravelly SAND, gray, medium dense, wet, poorly graded, subrounded, fine grained, shell fragments		8		7 6 6
	43.5		Silty SAND; gray, loose, wet, poorly graded, subrounded, fine grained, shell fragments		9		1 5 5
	48.5		Silty SAND, gray, medium dense, wet, poorly graded, subrounded, fine grained, shell fragments		10		6 8 10
	50.0		End of Boring at 50'				

NOTES (continued)

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0177

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Hole No. CP05-EAARS-CB-0177

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0177

Hole No. CP05-EAARS-CB-0178

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774612.9, E759154.5 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No. CP05-EAARS-CB-0178		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: 0.8 ft		16. Date Hole Started 12/8/2004 Completed 12/8/2004	
8. Thickness of cap rock: 5.2 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
9. Depth of hole: 50 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: Ray Brainard	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT: Dark Brown, fibrous organic material				
	0.8		LIMESTONE: moderatetly weathered, white to light grayish green and light yellowish brown, hard, strong		1	Sample at 0 ft. jar from surface peat. Gel-X mud. Started at 9:00. 9:08-9:22 to core. Lost 50% of drill fluids during coring.	
				REC=56 RQD=48	1		
	4.0		Strong chert nodules 1.3'-2.2' few small vugs, <0.5 in				
	5.0		LIMESTONE: highly to extremely weathered, white, granular silt to gravel (sm) with shells				
	6.0		Calcareous Silty SAND: white, loose to medium dense, wet, fine grained, poorly graded, subrounded, with shell fragments		2		14 10 17
	8.5		Some Gravel		3	7.5'-12.5' Hard drilling	3 3 31
	13.5		Grades loose, trace gravel		4		5 4 4

0 2 4 6 8 10 12 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0178

115

Hole No. CP05-EAARS-CB-0178

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Shelly SAND; gray, medium dense to very dense, fine grained, poorly graded, some silt, calcareous		5		14 12 9
	23.5		Grades to Gravelly SAND; light greenish gray, very dense, chert gravel up to 1-inch diameter, some silt, calcareous		6		50/4"
	28.5		Grades to SAND; tan, dense, with shells, well graded, fine grained, calcareous		7	1.25" diameter gravel at top of sample likely the reason for high blow counts	26 25 16

(continued)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0178

Hole No. CP05-EAARS-CB-0178

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		SAND; greenish gray, loose to dense, with shell fragments		8	Moisture=24.5%; -200=10.3%	5 7 11
	38.5		Grades to dense		9		9 16 17
	43.5		Grades to loose with shells		10		6 5 5
	48.5		Grades to medium dense		11	SAND with some gravel and trace silt	9 7 10
	50.0						
			End of Boring at 50'				

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

NOTES (continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0178

Hole No. CP05-EAARS-CB-0178

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8						
						1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0178

118

Hole No. CP05-EAARS-CB-0179

DRILLING LOG	Division:	Installation: Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method
2. Location: N774612.9, E750243.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0179		13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured
		16. Date Hole Started 12/8/2004 Completed 12/8/2004
7. Thickness of Burden: 1.8 ft		17. Elevation Top of Hole: Not Surveyed (ft)
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A
9. Depth of hole: 50 ft		19. Inspector: Ray Brainard

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark brown, fibrous, organic material			Started drilling at 1:55	
	1.8		LIMESTONE; moderately weathered, hard, strong, white to medium brownish gray and light yrllowish brown, some vugs, lots of shells	REC=42 RQD=21	1	2:05-2:34 for core run. Gel-X Mud	
	6.8		Calcareous Silty SAND; white, loose, shell fragments		1	Sample 6.8'-8.3' SPT- Limestone slough, probably blocked tube. SAND with some Silt to Gravel	12, 2, 2
					2		4, 3, 3
					3		6, 4, 4

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0179

Hole No. CP05-EAARS-CB-0179

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Shelly SAND; light gray, medium dense, wet, fine grained, poorly sorted, subangular, with silt, calcareous		4		6 7 7
	23.5		Sandy GRAVEL; medium grayish brown, very dense, gravel pieces are angular, limestone, shells and coral, with silt, calcareous		5		9 50/5"
	24.5		Shelly SAND; light greenish gray, medium dense, with silt, calcareous, fine grained, trace gravel				
	28.5		SAND; light greenish gray, medium dense, fine grained, trace shells and silt, calcareous		6		9 11 14

16 18 20 22 24 26 28 30 32

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0179

Hole No. CP05-EAARS-CB-0179

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: Not Surveyed Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Grades with shells		7		7, 13, 16
	38.5		Grades with some gravel		8		8, 5, 4
	43.5		Grades trace gravel		9		7, 5, 5
					10	Finished drilling at 4:45	10, 7, 6
	50.0		End of Boring at 50'				

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0179

121

Hole No. CP05-EAARS-CB-0179

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0179

122

Hole No. CP05-EAARS-CB-0180

DRILLING LOG	Division	Installation	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773531.5, E759154.5 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0180		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: 1.3 ft		16. Date Hole Started 12/9/2004 Completed 12/9/2004	
8. Thickness of cap rock: 5.2 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
9. Depth of hole: 50 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: Ray Brainard	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT			Start drilling at 12:50pm WYO-Ben Mud 12:57-1:24 to core	
	1.3		LIMESTONE; lighgt gray to light yellowish brown, moderately weathered, hard, strong, lots of shells, vuggy	REC=34 RQD=0	1		
	6.5		Calcareous Silty SAND, white, medium dense to dense, wet, fine grained, poorly graded, subangular, with shell fragments, some gravel		1		7 6 14
					2		5 3 28
					3	SAND with some silt and trace gravel	6 5 7
	15.0						

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0180

Hole No. CP05-EAARS-CB-0180

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0		Gravel grades out				
	18.5		SAND; gray, medium dense to very dense, wet, fine grained, well graded, subangular, shell fragments, with silt		4		4 9 10
						Drilling hard at 23.4'	
	23.5		LIMESTONE; light yellowish brown to gray, hard, strong, shelly				50/1"
	24.5		Silty SAND; white, medium dense, wet, fine grained, poorly graded, with shell fragments, calcareous subangular		5	Drilling hard down to 24.5'	
					6		14 10 10

(continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0180

Hole No. CP05-EAARS-CB-0180

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Grades white to gray		7		5 8 7
	38.5		Silty SAND; gray, loose to dense, wet, fine grained, poorly graded, with shell fragments		8		14 18 14
	43.5		Trace gravel grades in		9		10 13 13
	48.5		Gravel grades out		10		4 4 3
	50.0						
			End of Boring at 50'				

NOTES: (continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0180

125

Hole No. CP05-EAARS-CB-0180

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1.3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0180

APPENDIX 1
TEST CELL BORINGS AND PIEZOMETER INSTALLATION LOGS: 181-200

Hole No. CP05-EAARS-CB-0181

DRILLING LOG	Division	Installation	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773531.5, E760243.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No. CP05-EAARS-CB-0181		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: 0.9 ft		16. Date Hole Started 12/10/2004 Completed 12/10/2004	
8. Thickness of cap rock: 5.0 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
9. Depth of hole: 50 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: Ray Brainard	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0						
	0.2		PEAT				
			LIMESTONE, light gray, tan to light yellowish brown, hard, strong, shells, vertical; burrows top 4", some vugs			Start drilling at 8:45 WYO-Ben Mud drilled 0.6' into Limestone to create space for core barrel. Run 9:08-9:25. Manual hammer	
				REC=48 RQD=28	1		
	5.5		Calcareous Silty SAND; white, medium dense to very dense, fine grained, poorly graded, subangualer, with shell fragments, some gravel		1		5 / 26 / 39
					2		7 / 6 / 5
	13.5		Trace gravel		3		8 / 9 / 10

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0181

Hole No. CP05-EAARS-CB-0181

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed		Sheet 2 of 4 Sheets
Project: EAA Reservoir A-1		Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/0.5'
	15.0						
	18.5		Shelly SAND, light gray, medium dense to very dense, fine grained, poorly graded, subangular, some silt, calcareous		4		7 7 10
					5	Drilling hard 23.2'-23.5'. Shelly limestone? Hash? Out of limestone at 25.1'	50/1"
	28.5		Same as above		6		14 13 10

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

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(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0181

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Hole No. CP05-EAARS-CB-0181

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4 / 33.5		SAND, Light greenish gray, dense, fine grained, poorly sorted, with trace shells and silt		7		7, 17, 31
	38.5		Grades shelly		8		5, 7, 13
	43.5		Grades loose		9		3, 3, 3
					10	Drilling ended at 12:00. Moisture=26.8%, -200=6.7%	4, 3, 5
	50.0		End of Boring at 50'				

NOTES (continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0181

Hole No. CP05-EAARS-CB-0181

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0181

Hole No. CP05-EAARS-CB-0182

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774072.2, E759698.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0182		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/9/2004 Completed 12/9/2004	
7. Thickness of Burden: 0.6 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 6.4 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Ray Brainard	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT: Dark brown, fibrous, organic				
	0.6		LIMESTONE; moderately weathered, tan to light yellowish brown, shells, vugs and burrows (vertical), hard, strong			Started drilling at 8:30. WYO-Ben Mud. 8:43-9:01 Run 1. 9:15=9:22 Run 2. Dropped 3 impregnated sections off bit.	
				REC=72 RQD=40	1		
	4.0		Grades to moderately-highly weathered, white, chalky, more porous	REC=33 RQD=28	2		
	7.0		Calcareous Silty SAND, white, loose to medium dense, fine to medium grained, angular, some gravel, with shell fragments		1		10 10 5
					2	Manual Hammer	5 7 3
	13.5		Grades fine grained with trace gravel		3	Couple of hard spots drilling <0.1-0.2' thick	11 6 6

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0182

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Hole No. CP05-EAARS-CB-0182

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Calcareous Shelly SAND; light greenish gray, medium dense, shells 50%, fine grained, with silt, Limestone at 19.8, light yellowish brown, hard, strong		4		9 12 26
						Most blows were to get through this. Drilling through only 0.2' was hard. Got hard again at 23-23.4'.	
	23.5		Shelly LIMESTONE (shell hash) at 23.5' to 25'		5		50/5"
	25.0		Calcareous Shelly Sand; as above			Hard drilling 23.5-25'	
					6		24 16 10

(continued)

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0182

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Hole No. CP05-EAARS-CB-0182

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4				7		8 6 9
					8		13 10 14
	43.5		Silty SAND; light greenish gray, medium dense, wet, fine grained, poorly graded, subangular, with shells calcareous		9		6 6 6
	50.0				10	Finished drilling at 11:30	3 4 3
			End of Boring at 50'				

NOTES:

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0182

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Hole No. CP05-EAARS-CB-0182

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0182

Hole No. CP05-EAARS-CB-0183

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774619.8, E761239.5 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0183		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole: Started 12/10/2004; Completed 12/10/2004	
7. Thickness of Burden: 1.7 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 4.8 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Ray Brainard	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT			Started drilling 1:20 WYO-Ben Mud	
	1.7		LIMESTONE, tan to light yellowish brown, hard, strong, moderately weathered, most burrows filled, few vugs	REC=10 RQD=10	1	Run 1: 1:31 - 1:44	
	6.5		Calcareous Silty SAND, white, medium dense to very dense, wet, fine grained, poorly graded, angular, with shell fragments		1	Manual hammer	13 47 37
	8.0		Gravelly Silty SAND, white, dense, well graded, angular, calcareous with shells		2	Moisture=17.2%; -200=11.5%	21 15 15
						Hard drilling from 11'-12.5'	
	13.5		Silty SAND, white, medium dense, some gravel		3		6 6 7

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0183

Hole No. CP05-EAARS-CB-0183

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
						Hard drilling from 16'-17'	
	18.5		Shelly SAND; gray, medium dense to very dense, fine grained, poorly graded, subangular, some silt, trace gravel, calcareous		4	SAND with some Silt and trace Gravel	11 11 12
	23.5		LIMESTONE, brown, shelly, hard, strong		5	Drilled hard down to 23.7'. Drilled hard 26' to 27.3'	50/2"
	27.3		SAND; light greenish gray, loose to medium dense, fine grained, poorly sorted, with shells and silt				
					6	SAND with some Gravel and trace Silt	12 9 9

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0183

Hole No. CP05-EAARS-CB-0183

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Grades to trace silt		7		7 7 16
					8		9 10 10
	43.5		As above with 3 thin (<0.1') cemented sand layers		9		5 5 4
	48.5		Gravelly Silty SAND, white to brownish gray, angular, shelly		10		12 14 12
	50.0		End of Boring at 50'				

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0183

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Hole No. CP05-EAARS-CB-0183

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0183

Hole No. CP05-EAARS-CB-0184

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774619.8, E762328.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No. CP05-EAARS-CB-0184		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/10/2004 Completed 12/11/2004	
7. Thickness of Burden: 1.7 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 4.9 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Ray Brainard	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT			Start drilling 4:20 WYO-Ben Mud, run 1 4:26-4:37	
	1.7		LIMESTONE; tan, hard, strong, medium to slightly weathered, filled burrows	REC=25 RQD=20	1		
	6.6		Calcareous Gravelly Silty SAND, white, very dense, wet, fine to medium grained, poorly graded, angular, with shell fragments		1		6 10 50/5"
	8.5		Gravel grades out. Silty SAND, white, medium dense, fine grained, angular, shells		2		5 7 3
					3		14 14 14

(continued)

LOG FORM

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0184

Hole No. CP05-EAARS-CB-0184

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5					Hard drilling at 16.5'-17.5'	
			Calcareous Shelly SAND; light gray, medium dense, wet, fine grained, poorly graded, subangualer, with silt		4		16 13 11
	23.5		Shelly LIMESTONE; grayish brown, hard, strong		5	Hard drilling off and on 23.5'-27'	48 50/4"
	27.0		SAND; light gray, dense, fine grained, with silt, calcareous and cemented sand in thin layers (<1.5"), gray, hard, strong				
					6	Gravelly SAND with trace Silt	7 21 12

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0184

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Hole No. CP05-EAARS-CB-0184

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		As above, but no cemented sand and grades light greenish gray		7		17 20 23
	38.5		Grades with shells		8		13 18 15
	43.5		Grades trace silt, medium dense		9		10 10 12
	48.5		Shelly SAND; light greenish gray, medium dense, fine grained, poorly sorted, trace silt		10		10 8 8
	50.0						
			End of Boring at 50'				

NOTES (continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0184

142

Hole No. CP05-EAARS-CB-0184

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0184

Hole No. CP05-EAARS-CB-0185

DRILLING LOG	Division	Installation	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773538.4, E761239.5 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0185		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/10/2004 Completed 12/11/2004	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		Peat; Dark brown				
	0.5		LIMESTONE; yellowish gray at the top, gray in the middle and white at the bottom, moderately weathered at the top to slightly weathered at the bottom, vuggy	REC=43 RQD=27	1	Core run start=10:45AM. Core run end=10:55am (0.5'-5.5')	
	5.5		Calcareous Silty SAND; white, loose, wet, poorly graded, fine to medium grained, subangular, shell fragments		1		5 4 4
	8.5		Calcareous Silty SAND; white to gray, very dense, wet, poorly graded, fine to medium grained, subangular, shell fragments, trace gravel		2		2 2 50/5"
	13.5		Calcareous Silty SAND; white, dense, wet, poorly graded, fine grained, subangular, shell fragments		3		8 7 31

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0185

Hole No. CP05-EAARS-CB-0185

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Calcareous Silty SAND; white to gray, medium dense, wet, poorly graded, fine to medium grained, subangular, shell fragments		4		6 12 17
	23.5		Cemented Silty SAND; gray, very dense, wet, poorly graded, fine grained, subrounded		5		50/4"
						Hit hard layer at 25'-4"thick	
						Hit hard layer at 26.5'-3" thick	
	28.5		Calcareous Gravelly SAND; white to gray, very dense, wet, poorly graded, fine to medium grained, subangular, shell fragments		6		45 37 14

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0185

Hole No. CP05-EAARS-CB-0185

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4						
	33.5		Silty SAND; gray, dense, poorly graded, fine grained, subrounded, shell fragments		7		7 17 23
	38.5		Silty SAND; gray, medium dense, poorly graded fine grained, subrounded, shell fragments		8		5 8 9
	43.5		Sandy SILT; gray, firm wet, low plasticity, shell fragments		9		2 2 4
	48.5		Silty SAND; gray, medium dense, poorly graded, fine to medium grained, subrounded, shell fragments		10		9 9 9
	50.0						
			End of Boring at 50'			NOTES (continued)	

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0185

Hole No. CP05-EAARS-CB-0185

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0185

Hole No. CP05-EAARS-CB-0186

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773538.4, E762328.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0186		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/10/2004 Completed 12/11/2004	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT; Dark brown				
	0.5		LIMESTONE; gray to yellowish gray, slightly weathered at the top and bottom, moderately weathered in the middle, hard, vuggy, 0.5 inch hole at the bottom			Drilled with hand sampler to 6" bgs. Core run start=3:55pm. Core run end=4:05pm (0.5'-5.5')	
				REC=56 RQD=50	1		
	5.5		Calcareous Gravelly SAND; white, very dense, wet, poorly graded, fine grained, subangular, limestone seams		1		13 50 8
	8.5		Calcareous Silty SAND; white to gray, very loose to medium dense, wet, poorly graded, fine to medium grained, subangular, limestone seams, some gravel		2		4 2 2
					3		8 10 8

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0186

Hole No. CP05-EAARS-CB-0186

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 2 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
	18.5		Calcareous Silty SAND; gray, medium dense, wet, poorly graded, fine grained, subangular, shell fragments		4		3 12 17
						Moisture=26.2%; -20=23.3%	
	23.5		Color changes to white		5	Hit hard layer at 26.0' for 15" thick. Slow penetration rate.	13 11 9
	28.5		Cemented Calcareous Gravelly SAND; gray, very dense, wet, poorly graded, medium grained subangular, shell fragments		6	Continued with 30 more blow counts after 50 blow counts-no penetration	6 50/5"

16 18 20 22 24 26 28 30 32

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0186

149

Hole No. CP05-EAARS-CB-0186

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 3 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	33.4 33.5		Silty SAND; gray, loose to dense, wet, poorly graded, fine grained, subrounded		7		9 16 23
	38.5		same as above		8		12 22 20
	43.5		Cemented sand particle 1.5" in diameter		9		10 14 13
	48.5		Some gravel (cemented sand)		10		6 5 5
	50.0						
			End of Boring at 50'			NOTES (continued)	

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0186

150

Hole No. CP05-EAARS-CB-0186

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

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70

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0186

Hole No. CP05-EAARS-CB-0187

DRILLING LOG	Division:	Installation:	Sheet 1 of 4 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774079.1, E761783.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0187		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 12/11/2004 Completed 12/11/2004	
7. Thickness of Burden: 2.0 ft		17. Elevation Top of Hole: Not Surveyed (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 50 ft		19. Inspector: Cem Altuntas	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	0.0		PEAT			Start drilling at 10:35 WYO-Ben Mud. Run 1 10:47-10:57	
	2.0		LIMESTONE; white, gray to light yellowish brown at top, hard, strong, some vugs, and shells	REC=16 RQD=14	1		
	7.0		Calcareous Silty SAND; white, very loose to very dense, wet, fine grained, poorly graded, with shells		1		4 4 8
					2		5 1 2
					3		9 7 8

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

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SAJ FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0187

152

Hole No. CP05-EAARS-CB-0187

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: Not Surveyed | Sheet 2 of 4 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	15.0						
						Moderately hard drilling 16.5'-16.9'	
						Silty SAND with trace gravel	
					4		~~14~~ 12 14
	20.0		Shelly Silty SAND at 18.9'; brown, medium dense, wet, fine grained, poorly sorted, calcareous				
						Hard drilling at 21'-21.5'	
	23.0		Grades light greenish gray				
					5		16 20
	24.7		Limestone layer at 24.7 - 24.9', brown, hard, strong, very shelly				50/5"
	24.9		Gravelly Silty Calcareous SAND at 25.7', light gray, medium dense, shells			Hard drilling 24.7'-25.7'	
					6		7 10 12

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ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0187

Hole No. CP05-EAARS-CB-0187

DRILLING LOG (Cont Sheet) Elevation Top of Hole: Not Surveyed Sheet 3 of 4 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.6'
	33.4 33.5		SAND; Light greenish gray, medium dense to dense, wet, fine grained, poorly graded, subrounded, with shells, trace silt		7		11 13 18
					8		12 12 10
	43.5		Grades with silt		9		6 6 7
	48.5		Grades to trace silt		10		8 8 8
	50.0		End of Boring at 50'				

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0187

154

Hole No. CP05-EAARS-CB-0187

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: Not Surveyed	Sheet 4 of 4 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
	51.8					1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

52 54 56 58 60 62 64 66 68 70

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0187

155

Hole No. CP05-EAARS-CB-0188

DRILLING LOG Division:	Installation: Sheet 1 of 8 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N774072, E760086.3 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0188	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Jim Smith	14. Total Number of Core Boxes: N/A
6. Direction of Hole ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole Started 2/24/2005 Completed 2/24/2005
7. Thickness of Burden: 0.0 ft	17. Elevation Top of Hole: 10 (ft)
8. Thickness of cap rock: 1.5 ft	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: Norm Holst

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		LIMESTONE Caprock			10.0 All calcitic material is at least partly shell fragment	
8.5	1.5		SAND; pale brownish gray, loose, wet, well graded, calcitic with some silt and trace gravel			7.0	
					1		5, 3, 5
4.0	6.0		Sandy GRAVEL; pale brownish gray, medium dense wet, calcitic, with some sand as above and trace silt		2	4.0	8, 8, 6
1.0	9.0		SAND; pale brownish gray, dense, wet, well graded, angular, calcitic, with some silt and trace gravel		3	1.0 CO3=82.3%	25, 21, 13
-3.5	13.5		Silty Gravelly SAND; pale brownish gray, medium dense, wet, well graded, angular, calcitic with fine, angular gravel and silt		4	-3.5 W=21% Silty SAND with Gravel Hard drilling 14.5 to 15 ft	5, 3, 19

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

continued

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0188

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Hole No. CP05-EAARS-CB-0188

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10 Sheet 2 of 5 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0				-5.0 LIMESTONE	
-8.5	18.5	Sandy GRAVEL; pale brownish gray, very dense, wet, angular calcitic with sand and trace silt		5	-8.5	15 50
					-12.0	
-12.5	22.5	LIMESTONE			Hard drilling 22.5 ft to 24 ft. LIMESTONE Caloosahatchee Formation	
-14.0	24.0	SAND; pale brownish gray, medium dense, wet, poorly graded, mostly fine grained, subrounded and quartzose with some medium to coarse grained, angular, calcitic sand and trace gravel		6	-14.0	50/1"
				7	-18.5 CO3=14.5%	6 7 9

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0188

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Hole No. CP05-EAARS-CB-0188

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND; as above		8	-23.5	14 11 10
-28.5	38.5		SAND; pale greenish gray, loose , wet, poorly graded, fine grained, quartzose with trace medium to coarse grained, angular, calcitic sand and fine gravel		9	-28.5	15 12 8
-33.5	43.5		SAND; as above		10	-33.5	6 4 4
-38.5	48.5		SAND; as above		11	-38.5	5 3 3
						-41.0	

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0188

Hole No. CP05-EAARS-CB-0188

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
						Hard drilling 51 to 52 ft LIMESTONE	
-43.5	53.5					-43.5	
			Sandy GRAVEL; pale greenish gray, very dense, wet, angular, fine grained, calcitic with fine, subrounded quartzose and medium to coarse grained, angular, calcitic sand and trace silt		12	W=17%; SAND with Silt and Gravel	26 37 45
-48.5	58.5					-48.5	
			SAND; pale greenish gray, medium dense, wet, poorly graded mostly medium grained, angular and calcitic with some fine grained, subrounded and quartzose, trace fine, angular gravel		13	W=25%; Silty SAND	5 14 13
-53.5	63.5					-53.5	
			SAND; as above but mostly fine grained, subrounded and quartzose with some medium grained, angular, calcitic sand and trace fine gravel		14	CO3=41.6%	13 8 7
-58.5	68.5					-58.5	
			SAND; light greenish gray, medium dense, wet, mostly medium to coarse grained, angular calcitic sand, some fine grained, subrounded, quartzose sand, trace gravel		15		16 12 13

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0188

Hole No. CP05-EAARS-CB-0188

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
-63.5	73.5		SAND; as above but with some gravel and trace silt		16	-63.5 CO3=69.1%	14 11 13
-68.5	78.5		SAND; light greenish gray, medium dense, wet, mostly medium to coarse grained, angular and calcitic, some fine grained, subangular and quartzose, trace calcareous gravel		17	-68.5	14 13 14
-73.5	83.5		SAND; as above but more fine grained quartzose sand then medium to coarse grained calcitic sand		18	-73.5 W=22%, SAND with Silt and Gravel	16 6 13
-78.5	88.5					-78.5	

72 74 76 78 80 82 84 86 88

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0188

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Hole No. CP05-EAARS-CB-0188

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND: pale greensih gray, medium dense, wet, well graded, fine grained, subrounded, quartzose, sand and medium to coarse grained, angular, calcitic sand, trace gravel		19	-78.6 W=21%; SAND with Silt	9 8 12
-83.5	93.5		SAND; as above but trace silt		20	-83.5	14 12 15
-88.5	98.5		SAND; as above but poorly graded, mostly medium to coarse grained, angular, calcitic with some fine grained, subrounded, quartzose, trace silt and fine gravel		21	-88.5 W=15% SAND with Silt	15 12 15
-90.0	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0188

Hole No. CP05-EAARS-CB-0189

DRILLING LOG	Division:	Installation:	Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774459.7, E759898.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0189		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Jim Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 2/23/2005 Completed 2/23/2005	
7. Thickness of Burden: 0.0 ft		17. Elevation Top of Hole: 10 (ft)	
8. Thickness of cap rock: 3.5 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: Norm Holst	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		LIMESTONE caprock			10.0 All calcitic material noted below is at least partly shell fragments	
6.5	3.5		SAND: pale brownish gray, medium dense, wet, poorly graded, mostly fine grained, calcitic, trace gravel and silt			4.5	
					1	W=15%; Silty SAND	13 11 11
1.5	8.5		Grades very dense		2	1.5 CO3=79%	7 4 50
-3.5	13.5		Grades medium dense		3	-3.5	6 5 5

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0189

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Hole No. CP05-EAARS-CB-0189

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10	Sheet 2 of 6 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
						-6.0	
						Hard drilling 16 to 17 ft; Limestone	
						-8.5	
					4		6 8 8
-13.0	23.0		Sand as above but some silt			-13.5	
-14.0	24.0		LIMESTONE		5	Spoon bouncing hard drilling 23.8 to 25 ft Caloosahatchee Formation	50/5"
-15.0	25.0		Sandy GRAVEL; pale brownish gray, medium dense, wet, angular, calcitic with fine quartzose, subrounded sand and medium coarse, angular calcitic sand			-17.0	
						Hard drilling 27 to 27.5 ft	
						-18.5	
					6		14 12 13

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0189

Hole No. CP05-EAARS-CB-0189

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND, pale brownish gray, dense, wet, poorly graded, fine grained, subrounded, quartzose with a trace medium to coarse and angular, calcitic sand		7	-23.5 W=26%; SAND with Silt	14 18 19
-28.5	38.5		SAND; pale brownish gray, dense, wet, well graded as above but subsequal amount of fine quartzose and medium to coarse calcitic sand		8	-28.5	17 17 15
-33.5	43.5		SAND; pale greenish gray, loose, wet, poorly graded, fine grained, subrounded, quartzose with a trace medium to coarse grained, angular, calcitic sand		9	-33.5	5 3 4
-38.5	48.5		Sand as above		10	-38.5	5 3 4
						-41.0	

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0189

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Hole No. CP05-EAARS-CB-0189

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 4 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
						Hard drilling 51 to 52 ft	
-43.5	53.5		Sandy GRAVEL; pale greenish gray, medium dense, wet angular, calcitic with fine subrounded, quartzose sand, trace medium to coarse, angular, calcitic sand		11	-43.5 W=15%; SAND with Silt and Gravel	12 6 7
-48.5	58.5		SAND; pale greenish gray, medium dense, wet, well graded, fine, subrounded, quartzose and fine to medium, angular, calcitic sand with some fine angular, calcitic gravel		12	-48.5 CO3=63.2%	10 13 14
						-51.0 Hard drilling 61 to 61.5 ft	
-53.5	63.5		Sandy GRAVEL; pale greenish gray, dense, wet, angular, calcitic with fine subrounded, quartzose sand and medium to coarse, angular, calcitic sand		13	-53.5	10 17 24
-58.5	68.5		Sandy GRAVEL, as above		14	-58.5 W=18%; SAND with Silt and Gravel	29 20 20

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0189

Hole No. CP05-EAARS-CB-0189

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
-63.5	73.5		SAND; pale greenish gray, medium dense, wet, well graded, fine, subrounded, quartzose sand and medium to coarse grained, angular, calcitic sand, trace fine, angular gravel		15	-63.5	11 9 11
-68.5	78.5		SAND as above		16	-68.5 CO3=78.5%	9 8 12
-73.5	83.5		SAND; as above but with same fine calcitic gravel and dense		17	-73.5	15 18 16
-78.5	88.5					-78.5	

72 74 76 78 80 82 84 86 88

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0189

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Hole No. CP05-EAARS-CB-0189

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND; as above with some gravel but medium dense		18	-78.6 W=25%; Silty SAND	10 8 8
-83.5	93.5		SAND; as above but only a trace gravel and grades medium dense		19	-83.5	17 16 11
-88.5	98.5		SAND; as above		20	-88.5	13 11 10
-90.0	100.0		End of Boring at 100'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0189

Hole No. CP05-EAARS-CB-0190

DRILLING LOG	Division:	Installation: Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method
2. Location: N774072.2, E759311.3 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0190		13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Jim Smith		14. Total Number of Core Boxes: N/A
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured
		16. Date Hole Started 2/28/2005 Completed 3/1/2005
7. Thickness of Burden: 0.0 ft		17. Elevation Top of Hole: 10 (ft)
8. Thickness of cap rock: 2.5 ft		18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft		19. Inspector: Norm Holst

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		LIMESTONE caprock			10.0 All calcitic materials are at least in part shell fragments	
7.5	2.5		SAND; pale brownish gray, very dense, wet, well graded, angular, calcitic, some angular, fine gravel, trace silt			5.0	
					1	Loosing mud	9 4 50
						2.0	
					2	Probably thin LIMESTONE dense	50
-3.5	13.5		Silty SAND; medium dense, wet, poorly graded, mostly fine grained, angular, calcitic, some fine angular gravel		3	-3.5 W=26%, Silty SAND with Gravel	8 15 2

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0190

Hole No. CP05-EAARS-CB-0190

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
-8.5	18.5		Sandy GRAVEL; pale brownish gray, dense, wet, poorly graded, fine, angular, calcitic, some silt		4	-8.5 CO3=91.9% -11.0	19 34 5
-12.0	22.0		LIMESTONE; varing hardness		5	Hard drilling at 21 and again 22 to 22.5 ft loosing mud -13.5 -15.0	50
-15.5	25.5		SAND; pale brownish gray, medium dense, wet, poorly graded, fine grained, quartzose, trace angular, calcitic, fine sand, trace gravel		6	Caloosahatchee Formation -18.5	14 13 15

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0190

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Hole No. CP05-EAARS-CB-0190

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND; as above but subequal amount subrounded, quartzose and angular, calcitic dense		7	-23.5 CO3=56.5%	14 17 25
-28.5	38.5		SAND; like that at 28.5 ft but dense		8	-28.5	14 15 15
-33.5	43.5		SAND; like that at 28.5 ft but medium dense		9	-33.5	10 10 13
-38.5	48.5		SAND; pale greenish gray, medium dense, wet, poorly graded, fine grained, quartzose, trace angular, calcitic, fine sand and gravel		10	-38.5 Hole collapsed after retrieving this sample W=26%, Silty SAND	4 8 8 9

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0190

Hole No. CP05-EAARS-CB-0190

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 4 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
-43.5	53.5		Sandy GRAVEL, pale greenish gray, medium dense, wet, poorly graded, fine grained, angular, calcitic with fine, both subrounded, quartzose and angular, calcitic sand, some silt		11	-43.5 Hole collapses again	7 7 9
-48.5	58.5		GRAVEL; only a few pieces of fine angular, calcareous gravel recovered with a trace fine sand and silt		12	-48.5 Thin LIMESTONE; Lenses or cobbles at 58.7 and 63.6 ft	50/3"
-53.5	63.5		Calcareous GRAVEL; as above		13	-53.5	50/2"
-58.5	68.5		Sandy GRAVEL, pale greenish gray, medium dense, wet, poorly graded, fine grained, calcareous with subequal amounts of fine grained, subrounded quartzose, and fine to course grained		14	-58.5 W=19%, SAND with Silt and Gravel	30 15 14

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0190

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Hole No. CP05-EAARS-CB-0190

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2		angular, calcitic sand, trace silt			-60.2	
-63.5	73.5		SAND; pale greenish gray, medium dense, wet, poorly graded, mostly fine grained, subrounded, quartzose, some fine to coarse grained, angular and calcitic, trace fine angular, calcareous, gravel		15	-63.5 CO3=65%	16 14 14
-68.5	78.5		SAND; as above but mostly fine to coarse grained, angular and calcitic, some fine grained, subrounded and quartzose, trace gravel and silt		16	-68.5 W=22%, SAND with Silt and Gravel	15 16 14
-73.5	83.5		SAND; as above but dense		17	-73.5	18 20 19
-78.5	88.5					-78.5 (continued)	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0190

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Hole No. CP05-EAARS-CB-0190

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10 Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND; as above but medium dense		18	-78.6	7 6 12
-83.5	93.5		SAND; as above		19	-83.5 W=22%; SAND with Silt	16 13 16
-88.5	98.5		SAND; as above		20	-88.5 CO3=67.7%	17 12 14
-90.0	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-00 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0190

Hole No. CP05-EAARS-CB-0191

DRILLING LOG	Division:	Installation:	Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773684.7, E759698.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0191		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Jim Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 2/24/2005 Completed 2/24/2005	
7. Thickness of Burden: 3.0 ft		17. Elevation Top of Hole: 10 (ft)	
8. Thickness of cap rock: 3.5 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: Norm Holst	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		Muck (peat) and Limestone rubble			10.0 All calcitic material is at least partly shell fragments	
7.0	3.0		LIMESTONE caprock				
3.5	6.5		Sandy GRAVEL, pale brownish gray medium, dense angular, wet, calcitic with trace silt, well graded		1	3.0	7, 4, 13
1.0	9.0		Gravelly SAND, as above but more dense and more sand		2	1.0 Loosing Drill fluid	3, 21, 50/1.5"
-3.5	13.5		Silty SAND, pale brownish gray, medium dense, poorly graded, fine grained, angular, calcitic with trace fine gravel		3	-3.5 W=21%, Silty SAND	6, 4, 12

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0191

Hole No. CP05-EAARS-CB-0191

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
-8.5	18.5		Sandy GRAVEL: like that at 7 ft above but may contain trace very fine grained quartzose sand		4	-8.5 CO3=87.1%	7 35 50/3"
-12.0	22.0		LIMESTONE			-12.0 Hard drilling at 22 ft, very hard from 23 to 23.7 ft. Caloosahatchee Formation	
						-13.5	50/1"
-13.7	23.7		SAND: pale brownish gray, medium dense, wet, poorly graded, fine grained, subrounded, quartzose, with a trace angular calcitic sand and calcareous gravel		5		
					6	-18.5	24 11 9

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0191

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Hole No. CP05-EAARS-CB-0191

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND; pale brownish gray, medium dense, wet, poorly graded, mostly fine grained, subrounded, and quartzose, some fine to coarse grained, angualr and calcitic, trace gravel		7	-23.5 W=20%, SAND	11 14 9
						-26.0 Hard drilling 36 to 37 ft.	
-28.5	38.5		SAND; as above		8	-28.5 CO3=40.7%	9 9 14
-33.5	43.5		SAND; as above			-33.5	16
-34.0	44.0		SAND; as above but pale greenish gray		9	CO3=25.3%	11 8
-38.5	48.5		SAND; pale greenish gray, loose, wet, poorly graded, fine grained, subrounded, quartzose, trace fine to coarse grained, angular, calcitic sand		10	-38.5 Silty SAND	2 2 5

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0191

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Hole No. CP05-EAARS-CB-0191

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10 Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
						-42.0	
						Hard drilling 52 to 52.5 ft.	
-43.5	53.5		Silty GRAVEL; pale greenish gray, medium dense, angualr, calcareous, with some fine sand, calcitic and quartzose		11	-43.5	13 9 11
-48.5	58.5		Sandy GRAVEL; as above but with sand like that at 48.5 ft but mostly calcitic and trace silt		12	-48.5	8 9 13
						-50.0	
						Hard drilling 60 to 61 ft.	
-53.5	63.5		Gravelly SAND; pale greenish gray, very dense, wet, poorly graded, mostly medium to coarse grained, angular, and calcitic, some fine grained subrounded and quartzose, with fine angualr, calcareous gravel		13	-53.5	36 50/5"
-58.5	68.5		Gravelly SAND; as above but dense		14	-58.5 w=20%; SAND with Silt and Gravel	31 20 15

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0191

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Hole No. CP05-EAARS-CB-0191

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
-63.5	73.5		SAND, like that above but less (some) gravel		15	-63.5 CO3=68.9%	12 13 12
-68.5	78.5		Gravelly SAND, like that at 63.5 ft above		16	-68.5 CO3=67.8%	15 12 13
-73.5	83.5		Gravelly SAND, as above		17	-73.5	17 13 11
-78.5	88.5					-78.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0191

Hole No. CP05-EAARS-CB-0191

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND; pale greenish gray, medium dense, wet, poorly graded, mostly fine grained, subrounded and quartzose, with some medium to coarse grained angular, calcitic sand, some fine calcareous gravel		18	-78.6	16 11 14
-83.5	93.5		SAND; as above but trace silt and gravel		19	-83.5 W=23%; SAND with Silt	14 13 14
-88.5	98.5		SAND; pale greenish gray, medium dense, wet, poorly graded, mostly medium to coarse grained, angular and calcitic, some fine grained, subrounded and quartzose, trace fine gravel and silt		20	-88.5	16 13 11
-90.0	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1-3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0191

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Hole No. CP05-EAARS-CB-0192

DRILLING LOG — Division:	Installation: — Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N774079.1, E762171.3 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No. CP05-EAARS-CB-0192	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Ralph Smith	14. Total Number of Core Boxes: N/A
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole: Started 2/9/2005, Completed 2/9/2005
7. Thickness of Burden: 0.0 ft	17. Elevation Top of Hole: 10 (ft)
8. Thickness of cap rock: 5.5 ft	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: Norm Holst

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		LIMESTONE: pale brown, fine grained, shelly, vuggy, slightly weathered hard and strong to soft and friable, lowest 1.5 ft is very vuggy, porous, soft and weak	REC=82 RQD=49	1	10.0 All calcitic material is at least in part shell fragments 8.0 5.0	
4.5	5.5		Gravelly SAND: pale brown, very dense, wet, angular, well graded, some limestone fragments, calcitic, mostly shell fragments		1	Hard drilling 5.5 to 6.5 ft 2.0	9, 50/1.5"
1.5	8.5		SILT: pale brown, medium dense, wet, calcitic, some shell fragments		2		2, 10, 9
-1.0	11.0		Silty Sandy GRAVEL: pale brown, very dense, wet, angular, calcitic (mostly shell fragments)		3	-1.0	50/5.5"
-3.5	13.5		Silty SAND: pale brown, very dense, wet, well graded angular, calcitic (mostly shell fragments), probably with cemented zones		4	-3.5 Drill rattling about 14 to 15 ft	13, 50/2"

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT: EAA Reservoir A-1 — HOLE NUMBER: CP05-EAARS-CB-0192

Hole No. CP05-EAARS-CB-0192

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
-8.5	18.5		Becomes medium dense			-8.5	
					5	CO3=80.6%	14 12 8
						-12.0	
						Drilling harder about 21.5 to 23 ft	
						-13.5	
-14.3	24.3		LIMESTONE		6	Drill rattling and slow penetration LIMESTONE	10 50/4"
-16.5	26.5		SAND, pale brown, medium dense, wet, fine grained, quartzose with some fine, angular, calcitic gravel			-16.5	
						Formation SAND with Silt and Gravel	
						-18.5	
					7		28 17 14

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0192

Hole No. CP05-EAARS-CB-0192

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10 Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND; pale brown, dense, wet, fine grained, quartzose, some medium to coarse, angular shell fragments, trace silt		8	-23.5	11 18 14
-28.5	38.5		Sandy GRAVEL; pale brown, medium dense, wet, fine grianed, calcitic, angular, with fine, quartzose sand, trace shell in the sand		9	-28.5	15 12 9
-33.5	43.5		SAND; pale greenish gray, medium dense, wet, fine grained, quartzose, with little calcitic, angular coarse sand and fine gravel and shell fragments		10	-33.5	7 5 5
-38.5	48.5		Sandy GRAVEL; like 38.5 ft		11	-38.5 Gravel with Sand	15 18 11

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0192

Hole No. CP05-EAARS-CB-0192

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10	Sheet 4 of 6 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
-43.5	53.5		Sandy GRAVEL; like 38.5 but pale greenish gray		12	-43.5	9 13 9
-48.5	58.5		SAND; pale brown, medium dense, wet, fine grained, quartzose, with some calcitic, angular medium to coarse sand and fine gravel (shell fragments)		13	-48.5	6 7 8
-53.5	63.5		Sandy GRAVEL; pale brown, very dense, wet, fine, angualr calcitic, with fine grianed, quartzose sand and little silt		14	-53.5	50/4"
-58.5	68.5		Sandy GRAVEL, as above but some of gravel particles are shell fragments		15	-58.5	50/2"

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0192

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Hole No. CP05-EAARS-CB-0192

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
-63.5	73.5		SAND; pale greenish gray, medium dense, wet, well graded, medium to coarse is angular and calcitic, fine fraction is mostly quartzose, some fine, angular calcitic gravel		16	-63.5	16 13 14
-68.5	78.5		SAND, as above but dense		17	-68.5 SAND with Gravel	20 18 15
-73.5	83.5		SAND: like 78.5 ft		18	-73.5	17 19 22
-78.5	88.5					-78.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0192

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Hole No. CP05-EAARS-CB-0192

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND, as above		19	-78.6	15 18 14
-83.5	93.5		SAND; as above but medium dense		20	-83.5	19 21 17
					21	-88.5	15 12 7
-90.0	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0192

185

Hole No. CP05-EAARS-CB-0193

DRILLING LOG	Division:	Installation:	Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N774466.6, E761983.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No. CP05-EAARS-CB-0193		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Ralph Smith		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: Vertical [X] Inclined [ ]		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 2/9/2005 Completed 2/10/2005	
7. Thickness of Burden: 0.5 ft		17. Elevation Top of Hole: 10 (ft)	
8. Thickness of cap rock: 5.0 ft		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: Norm Holst	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0						
9.5	0.5		Muck; organic silt, dark brown			10.0	
4.5	5.5		LIMESTONE; pale brown to yellow, fine grained, shelly, vuggy, slightly weathered, strong and hard to soft, friable	REC=42 RQD=16	1	All calcitic material is at least in part shell fragments; 8.0; 4.5	
1.5	8.5		Gravelly SAND; light brown, medium dense, wet, angular, well graded, calcitic, shell fragments		1	GRAVEL with SAND; 1.5	10, 11, 10
-1.0	11.0		Silty GRAVEL; white, medium dense, wet, fine, angular, non plastic, calcitic, shell fragments		2	GRAVEL with Silt and Sand; -1.0	6, 5, 4
-3.5	13.5		GRAVEL; pale brown, very dense, wet, fine, angular, calcitic, trace sand and silt, shell fragments		3	SAND with Gravel; -3.5	8, 50/5.5"
			Sandy GRAVEL; pale brown, very dense, fine angular, calcitic, some silt, shell fragments		4	Gravel with Silt and SAND	12, 34, 40

Scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0193

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Hole No. CP05-EAARS-CB-0193

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10	Sheet 2 of 6 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
-8.5	18.5		Gravelly SAND; like 5.5 ft but very dense and contains larger shell fragments		5	-8.5	17 25 40
-13.5	23.5		Sandy GRAVEL like 13.5' (probably LIMESTONE)		6	-13.5 Drilling rattling; slow drilling for about 3 ft	42 50/3"
						-16.0	
-16.5	26.5		Sandy GRAVEL; pale brown, dense, wet angular, gravel and coarse to medium sand is calacitic, fine sand quartzose			Caloosahatchee Formation GRAVEL with Sand	
					7	-18.5	9 14 18

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0193

Hole No. CP05-EAARS-CB-0193

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND; pale brown, very dense, wet, fine grained, quartzose		8	-23.5 SAND	0, 24, 37
-28.5	38.5		SAND; as above but dense and with a trace of fine, calcitic gravel and shell fragments		9	-28.5 SAND with Gravel	11, 15, 20
-33.5	43.5		Sandy GRAVEL; pale greenish gray, medium dense, wet, fine, angular with fine, quartzose sand and trace shell fragments		10	-33.5	7, 9, 11
-38.5	48.5		Sandy GRAVEL; as above		11	-38.5	14, 10, 13

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0193

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Hole No. CP05-EAARS-CB-0193

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
-43.5	53.5		Sandy GRAVEL; medium dense, pale greenish gray, fine, wet, calcitic with some fine, quartzose sand and trace silt		12	-43.5	12 12 14
-48.5	58.5		Gravelly Silty SAND; pale greenish gray, medium dense, wet, calcitic, angular, with some fine, quartzose sand and trace silt		13	-48.5 Silty SAND -52.0 Hole caved, had to redrill to 63.5 ft	14 11 9
-53.5	63.5		Sandy GRAVEL; pale greenish gray, very dense, angular, wet, calcitic with some fine quartzose sand and trace silt		14	-53.5 SAND with Silt and Gravel	50/5"
-58.5	68.5		Gravelly SAND; pale greenish gray, very dense, angular, wet calcitic with some fine, quartzose sand and trace silt		15	-58.5 GRAVEL with Sand	5 29 30

(continued)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0193

Hole No. CP05-EAARS-CB-0193

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
-63.5	73.5		Gravelly SAND; as above but with no silt		16	-63.5	15 13 15
-68.5	78.5		Gravelly SAND; as above but dense		17	-68.5	18 23 27
-73.5	83.5		Gravelly SAND; with trace silt like at 68.5 ft		18	-73.5	10 11 12
-78.5	88.5					-78.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0193

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Hole No. CP05-EAARS-CB-0193

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND; pale greenish gray, dense, wet, mostly fine grained and quartzose with some calcitic, angular, fine to medium sand and trace angular, calcitic fine gravel and trace silt		19	-78.6	22 20 22
-83.5	93.5		SAND; as above		20	-83.5	18 15 16
-88.5	98.5		SAND; as above		21	-88.5	14 12 10
-90.0	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0193

Hole No. CP05-EAARS-CB-0194

DRILLING LOG Division:	Installation: Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N774079.1, E761396.3 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0194	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Ralph Smith	14. Total Number of Core Boxes: N/A
6. Direction of Hole ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole Started 2/10/2005 Completed 2/11/2005
7. Thickness of Burden: 1.0 ft	17. Elevation Top of Hole: 10 (ft)
8. Thickness of cap rock: 5.5 ft	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: Norm Holst

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		Fill and residual muck			10.0 Cored caprock	
9.0	1.0		LIMESTONE; light brownish gray to pale brown, fine grained, shelly, vuggy, dense, hard and strong to soft, weak and porous	REC=38 RQD=13	1	8.0	
4.5	5.5		Gravelly SAND, very light to pale brown, very dense, wet, angular, calcitic, fine to medium grained, trace shells		1	4.5 All calcitic material is at least in part shell fragments	4, 36, 15
1.5	8.5		Silty GRAVEL; white, medium dense, wet, angular, calcitic and Gravelly SAND as above		2	1.5	4, 16, 50
-1.0	11.0		Silty SAND; pale brown, medium dense, fine to medium grained, wet, angular, calcitic, some fine angular gravel		3	-1.0	13, 4, 15
-3.5	13.5		Silty SAND becomes very dense		4	-3.5	4, 18, 50/6"

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ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0194

Hole No. CP05-EAARS-CB-0194

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 2 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
-8.5	18.5		Silty SAND becomes dense			-8.5	10
					5	CO3=78.6%	8
							36
-13.5	23.5		No recovery; probably LIMESTONE			-13.5	50
					6	Spoon bouncing, drill rattling and slow drilling	
-15.0	25.0		SAND; pale greenish gray, medium dense, wet, fine grained, quartzose, some fine calcitic gravel, trace shell fragments and silt				
						-18.5	16
					7	Caloosahatchee Formation	21
							17

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0194

Hole No. CP05-EAARS-CB-0194

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		SAND; pale greenish gray, medium dense, wet, fine grained, quartzose, subrounded		8	-23.5 CO3=23.3% SAND with Silt	12 14 14
-28.5	38.5		SAND; as above but with a trace fine, angular, calcitic gravel		9	-28.5	10 7 14
-33.5	43.5		SAND; pale greenish gray, loose, wet, very fine grained, quartzose, subrounded, trace silt and shell fragments		10	-33.5	3 3 5
-38.5	48.5		SAND; pale greenish gray, dense, wet mostly fine grained, quartzose and subrounded, some medium to coarse grained, angular, and calcitic (shell fragments) trace fine, angular, calcitic gravel		11	-38.5	21 16 15

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0194

Hole No. CP05-EAARS-CB-0194

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
-43.5	53.5		Sandy GRAVEL; pale greenish gray, medium dense, wet, angular, calcitic, with similar medium to coarse sand fraction and some fine subrounded quartzose sand, trace silt		12	-43.5 SAND with Silt and Gravel	10 8 4
-48.5	58.5		Silty SAND; pale greenish gray, loose, wet, mostly medium to coarse grained, angular, platy, and calcitic (shell fragments) some fine grained quartzose, and subrounded, trace larger shell fragments		13	-48.5	6 4 4
						-53.5	4
-54.0	64.0		Probably LIMESTONE		14	Spoon bouncing, Drill rattling , slow drilling for about 1 ft	50/3"
-55.0	65.0		Gravelly SAND; greenish gray, very dense, wet, angular, well graded. Gravel, particles consist of fine quartzose sand and shell fragments in a calcitic matrix, trace silt				
					15	-58.5	46 29 21

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0194

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Hole No. CP05-EAARS-CB-0194

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10	Sheet 5 of 5 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
-63.5	73.5		Gravelly SAND as above but dense		16	-63.5 SAND with Silt and Gravel	14 15 15
-68.5	78.5		SAND; greenish gray, medium dense, wet, well graded, medium to coarse grained, angular, calcitic and fine grained, subrounded, quartzose with trace fine, angular gravel like the above		17	-68.5	12 12 14
-73.5	83.5		Sandy GRAVEL; pale greenish gray, dense, angular, wet, gravel is cemented fine, quartzose sand and shell fragments, sand fraction consists of fine to coarse shell fragments and fine quartzose sand		18	-73.5 Silty SAND with Gravel	15 19 21
-78.5	88.5					-78.5	

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0194

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Hole No. CP05-EAARS-CB-0194

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10		Sheet 6 of 6 Sheets
Project: EAA Reservoir A-1		Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND; like that at 78.5 ft		19	-78.6	14 14 12
-83.5	93.5		SAND; light greenish gray, dense, wet, well graded, fine grained, quartzose, subrounded, and fine to coarse grained, angular, calcitic, some silt and fine angular gravel		20	-83.5	20 15 15
-88.5	98.5		SAND; as above		21	-88.5	17 12 16
-90.0	100.0		End of Boring at 100'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0194

Hole No. CP05-EAARS-CB-0195

DRILLING LOG	Division:	Installation:	Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773691.6, E761783.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0195		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Eric Blumke		14. Total Number of Core Boxes: N/A	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: 0.0 ft		16. Date Hole Started 2/8/2005 Completed 2/8/2005	
8. Thickness of cap rock: 5.0 ft		17. Elevation Top of Hole: 10 (ft)	
9. Depth of hole: 100 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: Norm Hoist	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		LIMESTONE (caprock): pale gray to pale yellow, fine grained, thinly bedded, hard, strong, slightly weathered, vuggy and pitted, some shells, becomes moderately hard			10.0 Start 0919. Drill through caprock with tricone roller bit 6.5	
					1	Only limestone fragments recovered. Fort Thompson Formation 4.0	10, 15, 5
5.0	5.0		Silty Sandy GRAVEL: pale brownish gray, well graded, medium dense, wet, subangular, calcitic, some phosphate		2	1.5	5, 6, 8
1.5	8.5		Silty SAND: pale brownish gray, medium dense, wet, subangular, calcitic, some gravel and shells		3	Silty SAND -1.0	10, 11, 16
					4	-3.5	20, 14, 14
-3.5	13.5		As above		5	-4.5 CO3=89.5%	4, 4
-4.5	14.5		LIMESTONE: pale brownish gray, fine				26

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0195

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Hole No. CP05-EAARS-CB-0195

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10	Sheet 2 of 8 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0		grained, hard, shelly			-5.0	
-6.0	16.0		Silty SAND as above (8.5 to 10 feet)			Drill chirping	
						-6.5 Drills altering harder and softer	
					6	-8.5	10 6 16
						-12.5	
-13.5	23.5		Pale brownish gray, hard, sandy limestone fragments, LIMESTONE		7	-13.5 Water Break	50
-16.5	26.5		Gravelly Silty SAND, pale brownish gray, medium to very dense, wet, calcitic, shelly, trace fine quartz sand			-16.5 Caloosahatchee Formation	
					8	-18.5 Alternating hard and soft drilling	45 13 11
-19.5	29.5		Silty SAND, pale brownish gray, medium dense, wet, mostly calcitic (shell fragments) and medium to coarse grained and angular, some fine quartz sand				

continued

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0195

Hole No. CP05-EAARS-CB-0195

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10 Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
					9	-23.5	10 12 18
					10	-28.5	7 6 9
-33.5	43.5		SAND; pale greenish gray, loose, wet, very fine grained, quartzose		11	-33.5 Silty SAND	5 2 4
-38.5	48.5		SAND; pale greenish gray, medium dense, wet, fine grained, quartz, calcareous (shelly)		12	-38.5	9 9 14

(continued)

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0195

200

Hole No. CP05-EAARS-CB-0195

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10 Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
-43.5	53.5		SAND, pale brown to pale greenish gray, medium dense, wet, mostly medium to coarse shell fragments with little fine quartz sand, trace larfer shells or shell fragments		13	-43.5 Shell hash SAND with Silt	7 5 8
						-47.5	
-48.5	58.5		SAND, pale greenish gray, medium dense, wet, fine grained, quartz, calcareous (some shell fragments, mostly coarse sand size)		14	-48.5 Fuel break, refill mud tank	9 7 12
						-51.0 Very shelly	
-53.5	63.5		Large shell fragments		15	-53.5 Bit plugged	7 8 14
						-56.0 Hard drilling at 65.5 ft, 1 ft	
-58.5	68.5					-58.5	
-58.9	68.9		Only hard, angular limestone fragments recovered, drill chirping, LIMESTONE about 4 in thick		16	Very Shelly	50
			Sand as above at 63.5 ft				

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836 PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0195

Hole No. CP05-EAARS-CB-0195

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
						-63.5	
					17		18 17 18
-68.5	78.5		Gravelly SAND; pale greenish gray, medium dense, wet, well graded, angular, mostly calcitic with some fine quartz sand and trace silt		18	-68.5 SAND with Silt and Gravel	15 15 13
-73.5	83.5		Sandy GRAVEL; pale greenish gray, dense, wet, angular, mostly calcitic with some fine quartz sand		19	-73.5 SAND with Silt and Gravel	19 17 18
-78.5	88.5					-78.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0195

Hole No. CP05-EAARS-CB-0195

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		Gravelly SAND; like 78.5 ft		20	-78.6	14 14 14
-83.5	93.5		Silty SAND; pale greenish gray, dense, wet, well graded, angular, mostly calcitic with some fine quartz sand		21	-83.5	18 15 16
-88.5	98.5		Gravelly SAND; like 78.5 ft		22	-88.5	20 18 13
-90.0	100.0						
			End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

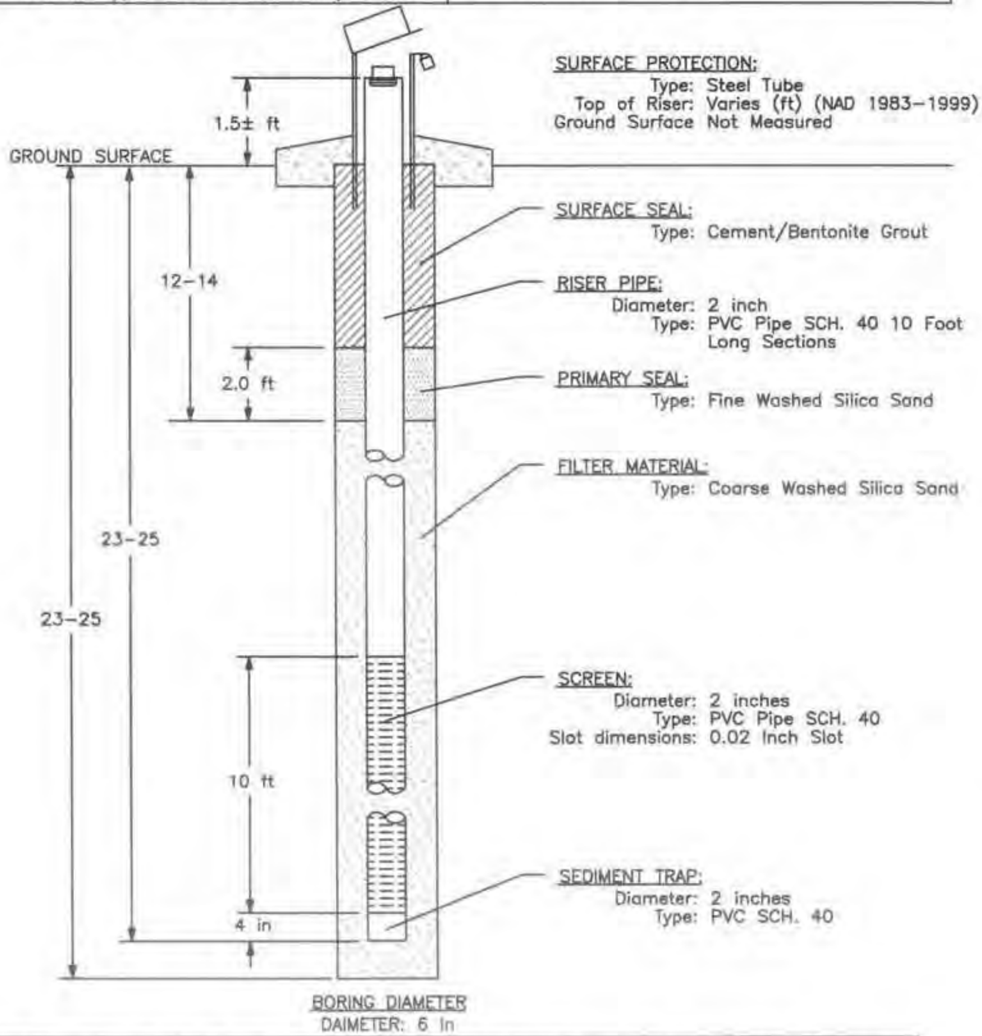
Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0195

Hole No. CP05-EAARS-TW-0196

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 773022, E 759162		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0196		11. Date Hole: Started 1-20-05 Completed 1-20-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.15
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

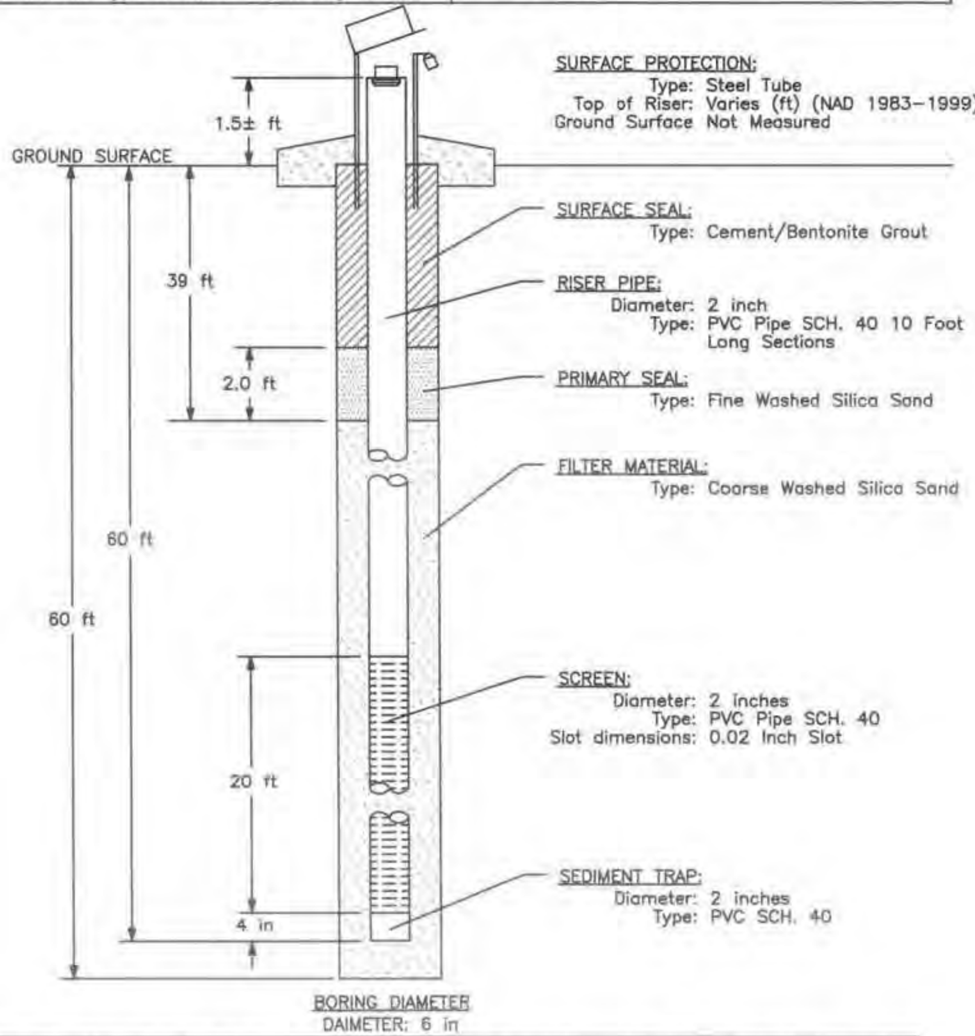


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0197

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 773032, E 759162		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0197		11. Date Hole: Started 1–27–05 Completed 1–27–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.57
6. Depth of Piezometer: 60 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

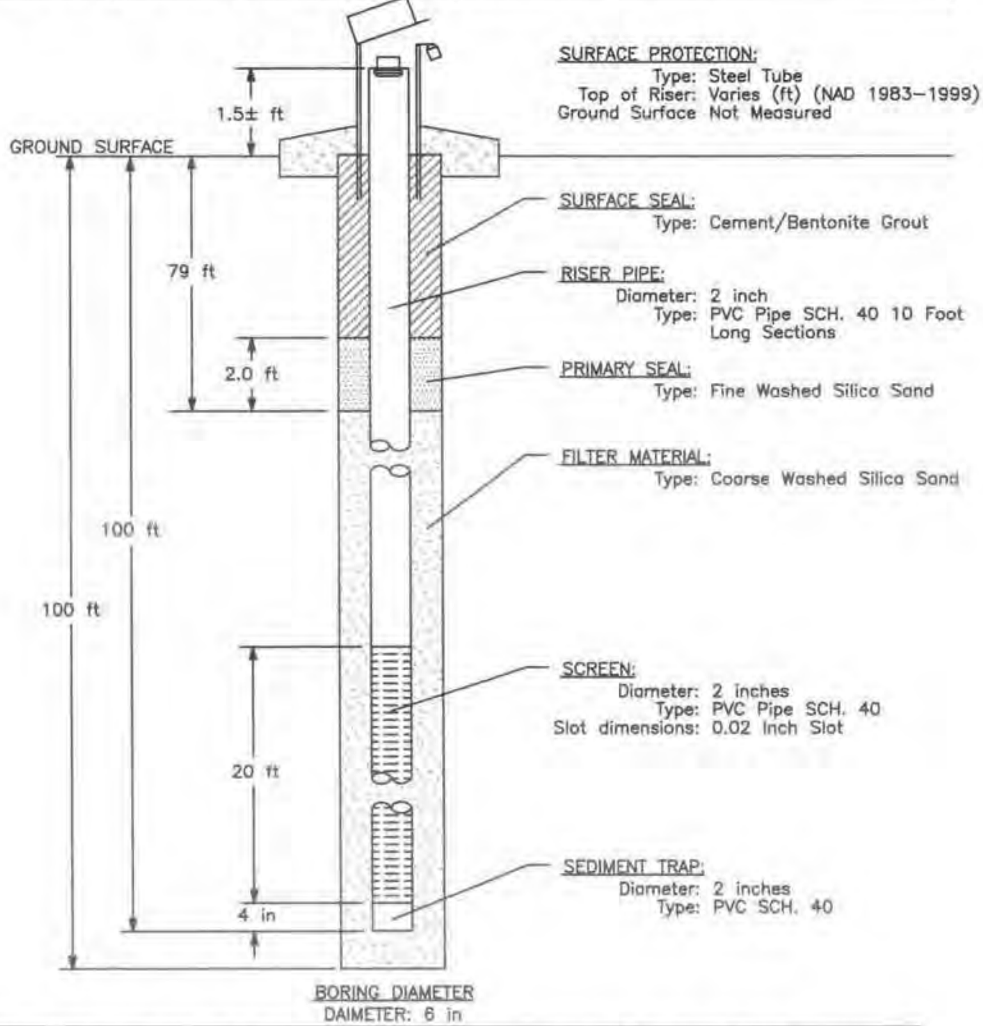


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0198

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 773042, E 759162		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0198		11. Date Hole: Started 1-28-05 Completed 1-28-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.31
6. Depth of Piezometer: 100 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

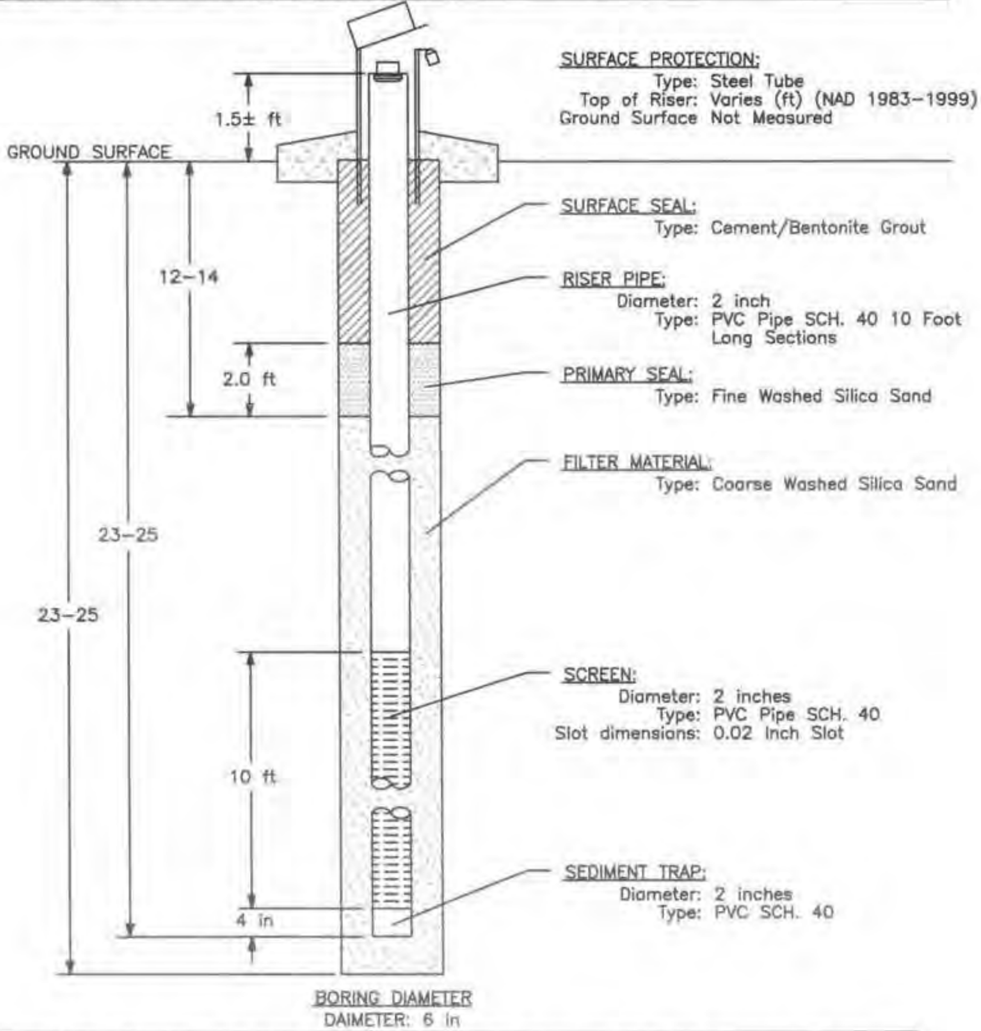


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0199

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774066, E 760740		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0199		11. Date Hole: Started 1-20-05 Completed 1-20-05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 25 ft		12. Elevation Top of Riser: 9.73
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

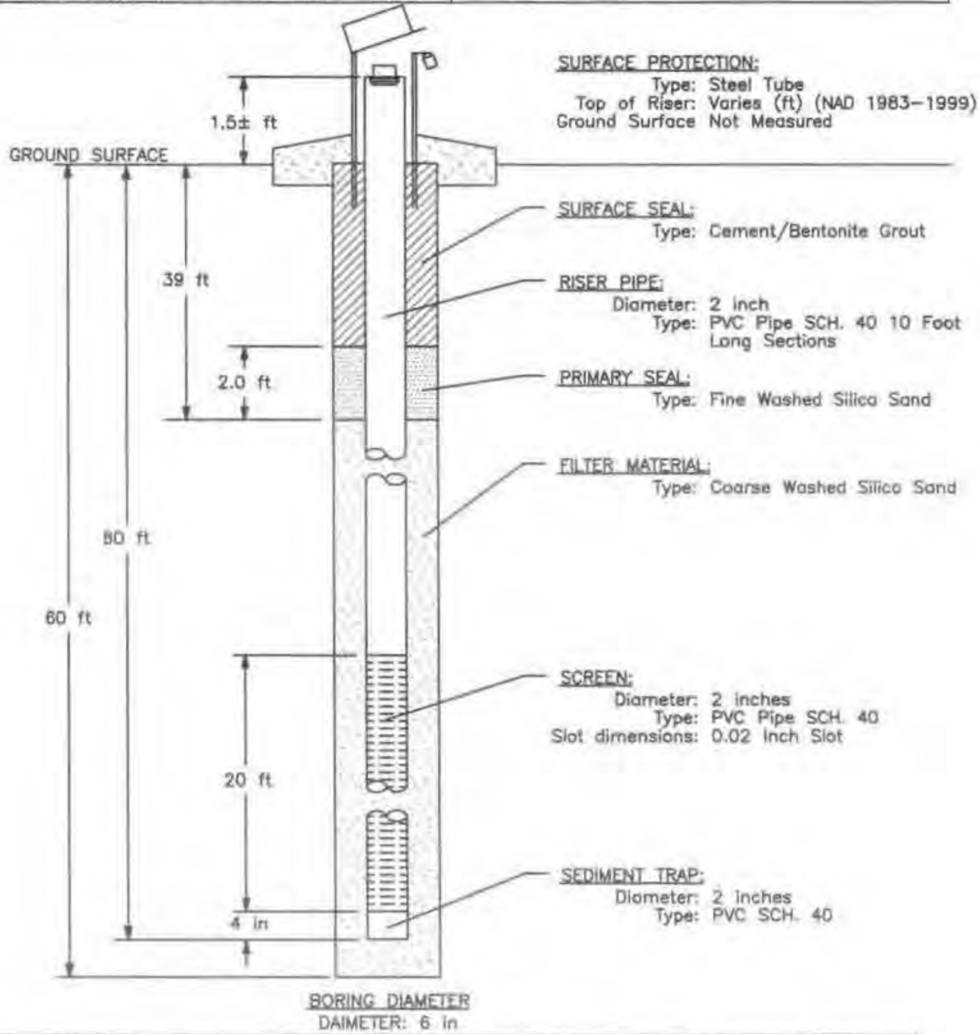


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0200

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774076, E 760740		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0200		11. Date Hole: Started 1–26–05 Completed 1–26–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.92
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst



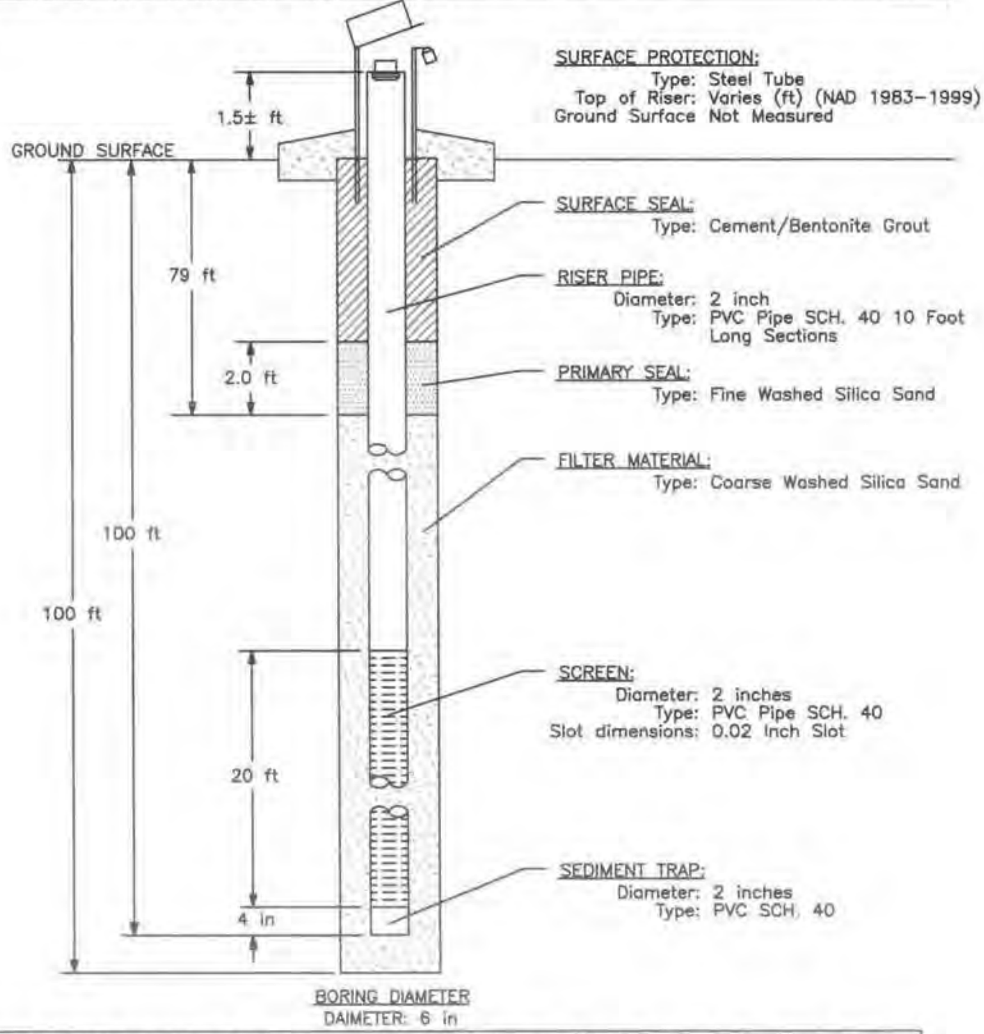
INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

APPENDIX 1
TEST CELL BORINGS AND PIEZOMETER INSTALLATION LOGS: 201-220

Hole No. CP05-EAARS-TW-0201

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774086, E 760740		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0201		11. Date Hole: Started 1-27-05 Completed 1-27-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.45
6. Depth of Piezometer: 100 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



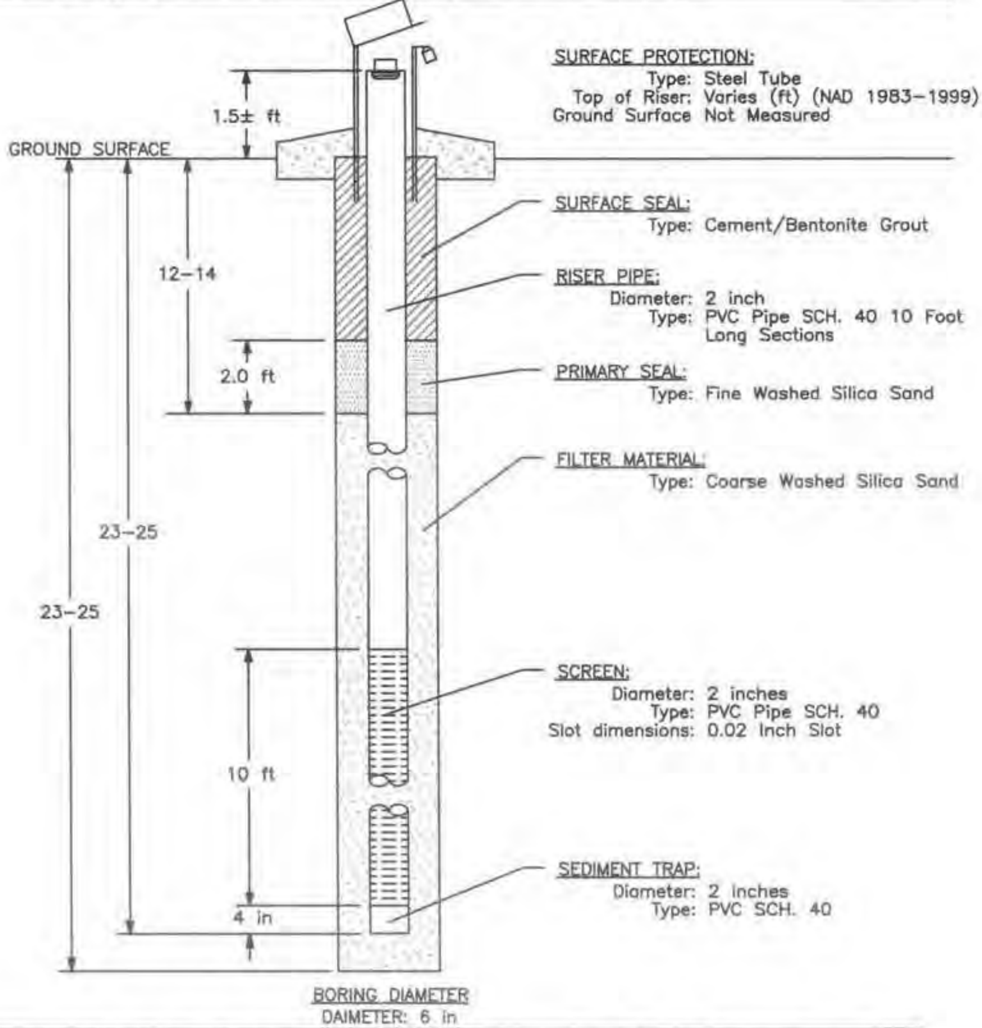
INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

210

Hole No. CP05-EAARS-TW-0202

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 775110, E 762336		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0202		11. Date Hole: Started 1-19-05 Completed 1-19-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.45
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

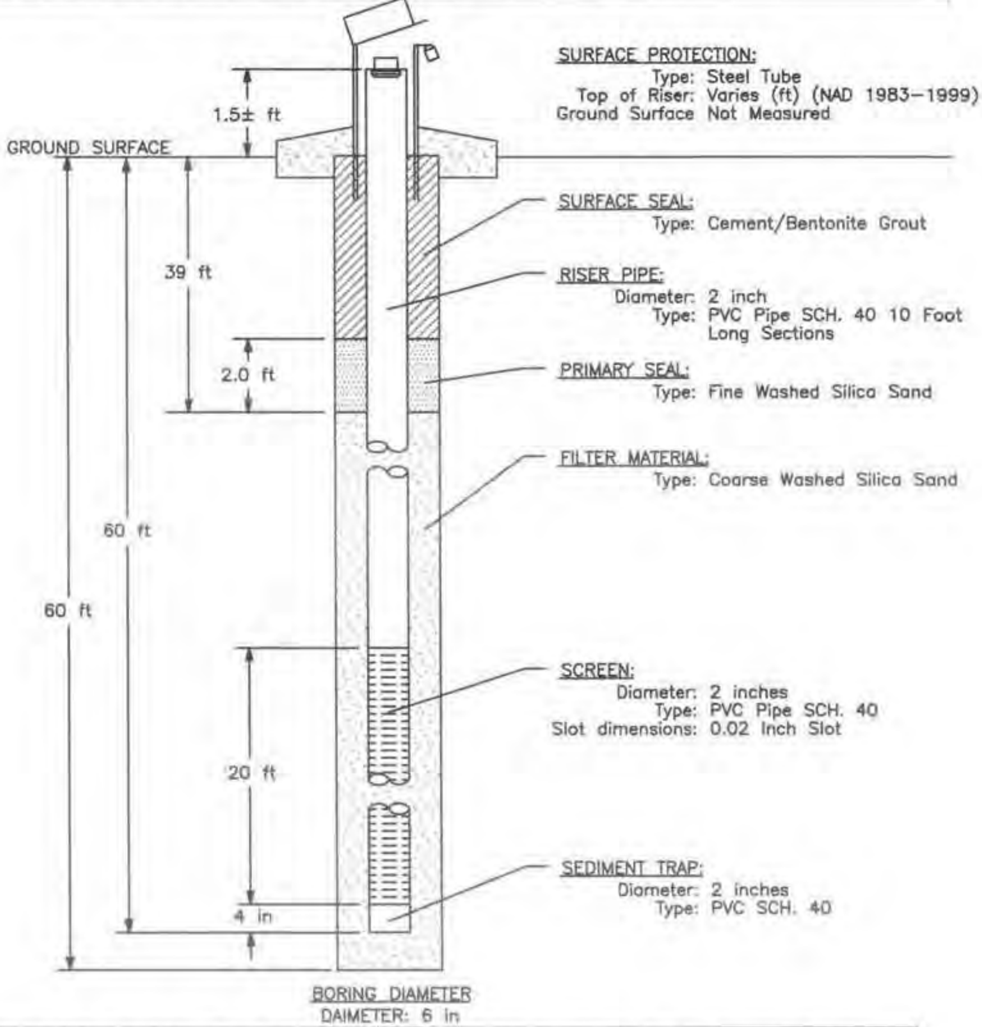


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0203

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 775120, E 762336		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0203		11. Date Hole: Started 1-29-05 Completed 1-29-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.08
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

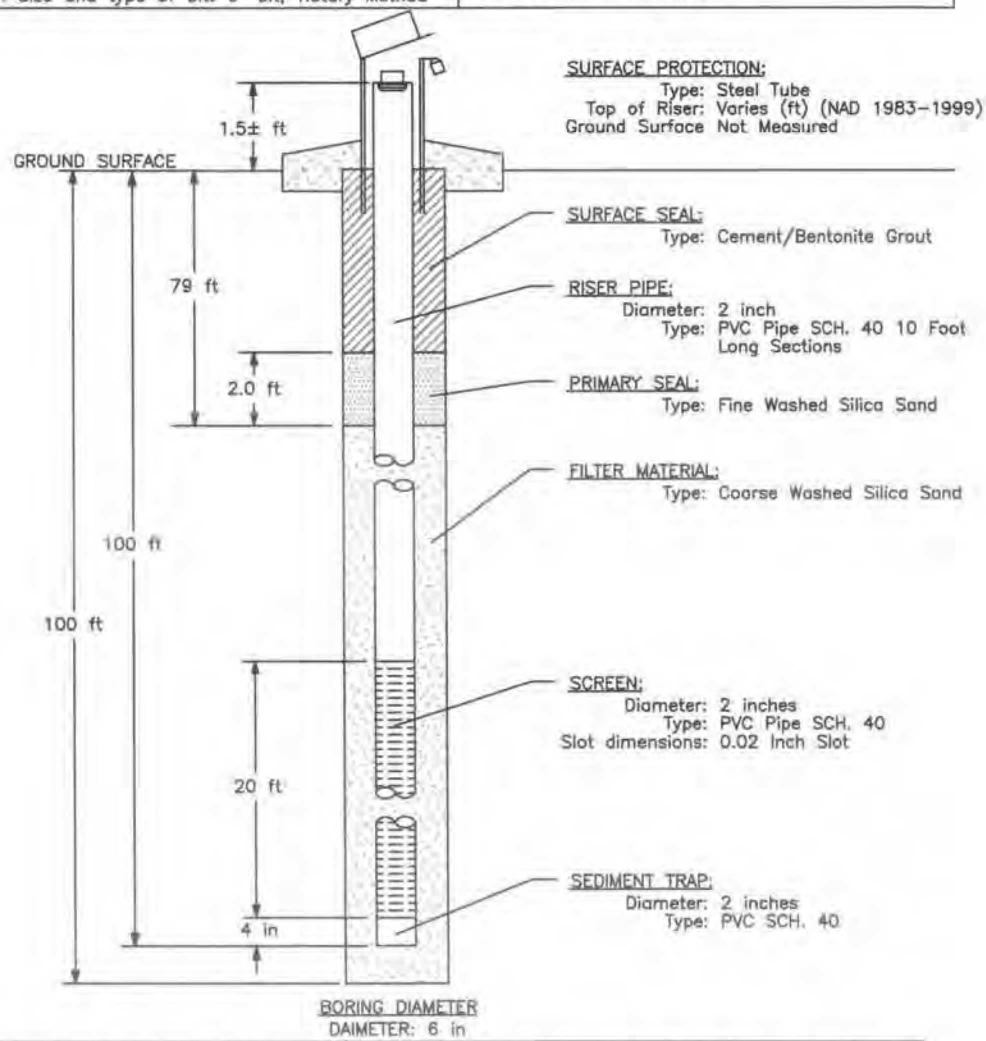


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0204

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 775130, E 762336		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0204		11. Date Hole: Started 1–30–05 Completed 1–30–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.28
6. Depth of Piezometer: 100 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

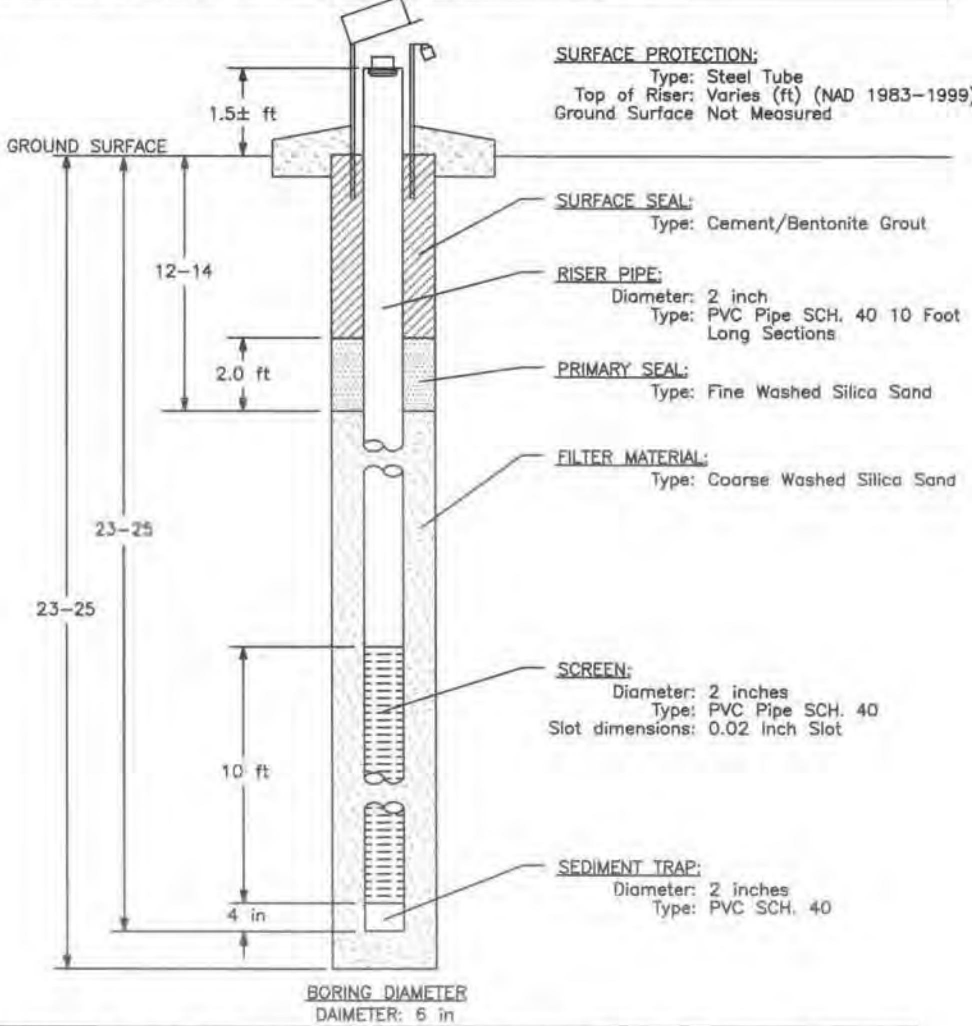


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0205

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 761240, E 773038		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0205		11. Date Hole: Started 3-28-05 Completed 3-28-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 11.73
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

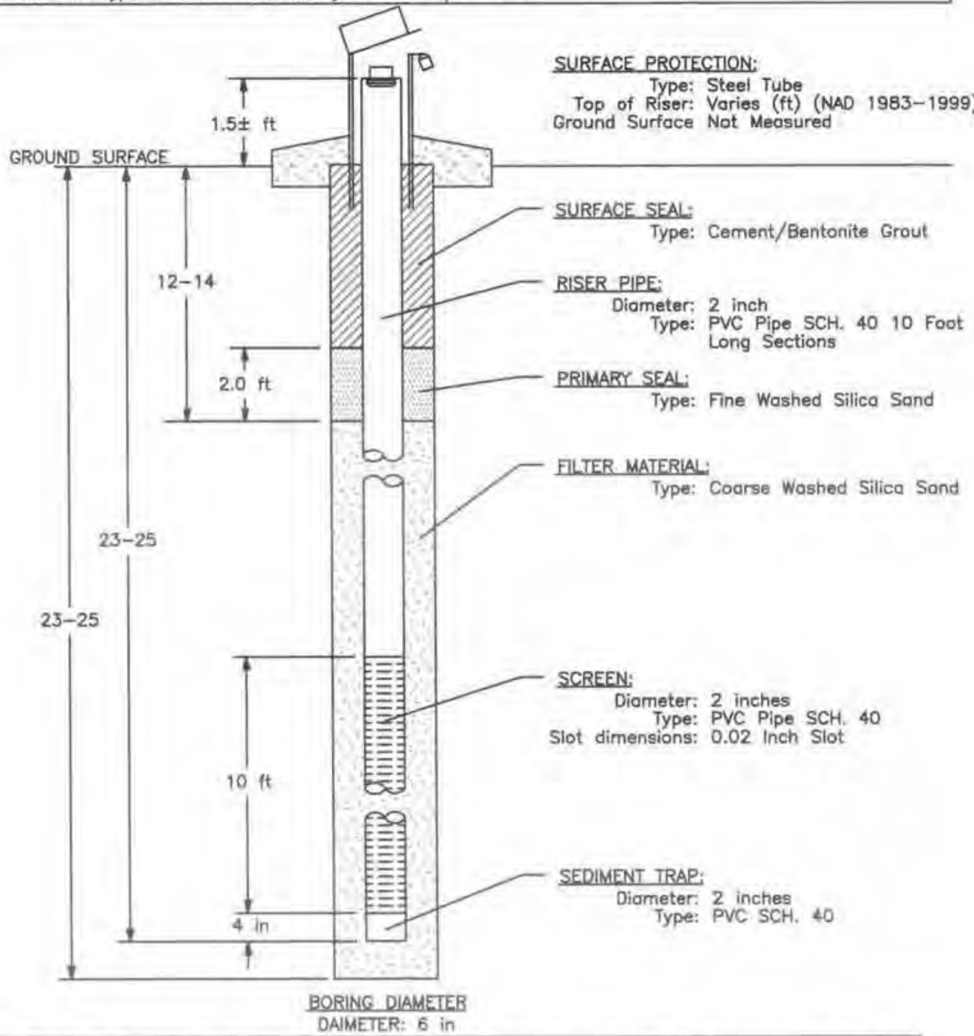


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0206

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 762328, E 773038		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0206		11. Date Hole: Started 3-28-05 Completed 3-28-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 11.37
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

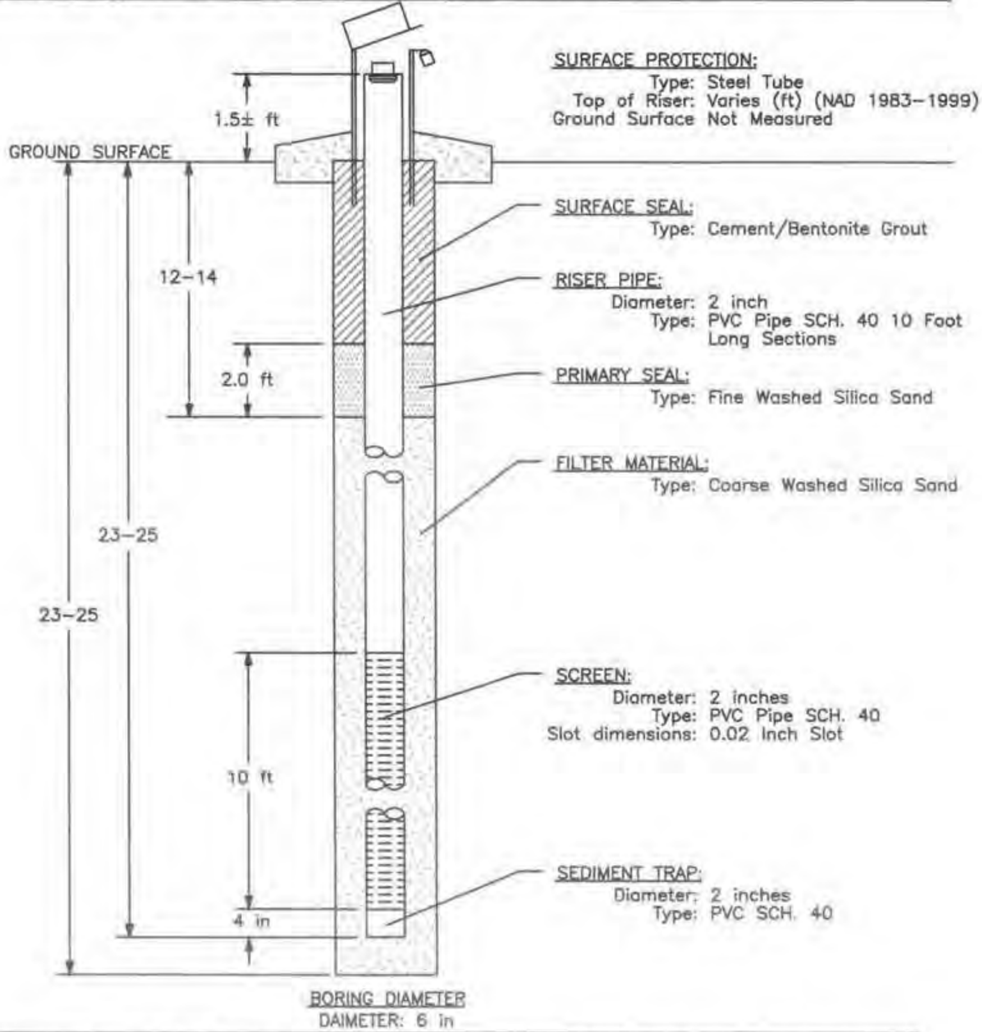


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No, CP05–EAARS–TW–0207

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774398, E 759697		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0207		11. Date Hole: Started 3–15–05 Completed 3–15–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.61
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



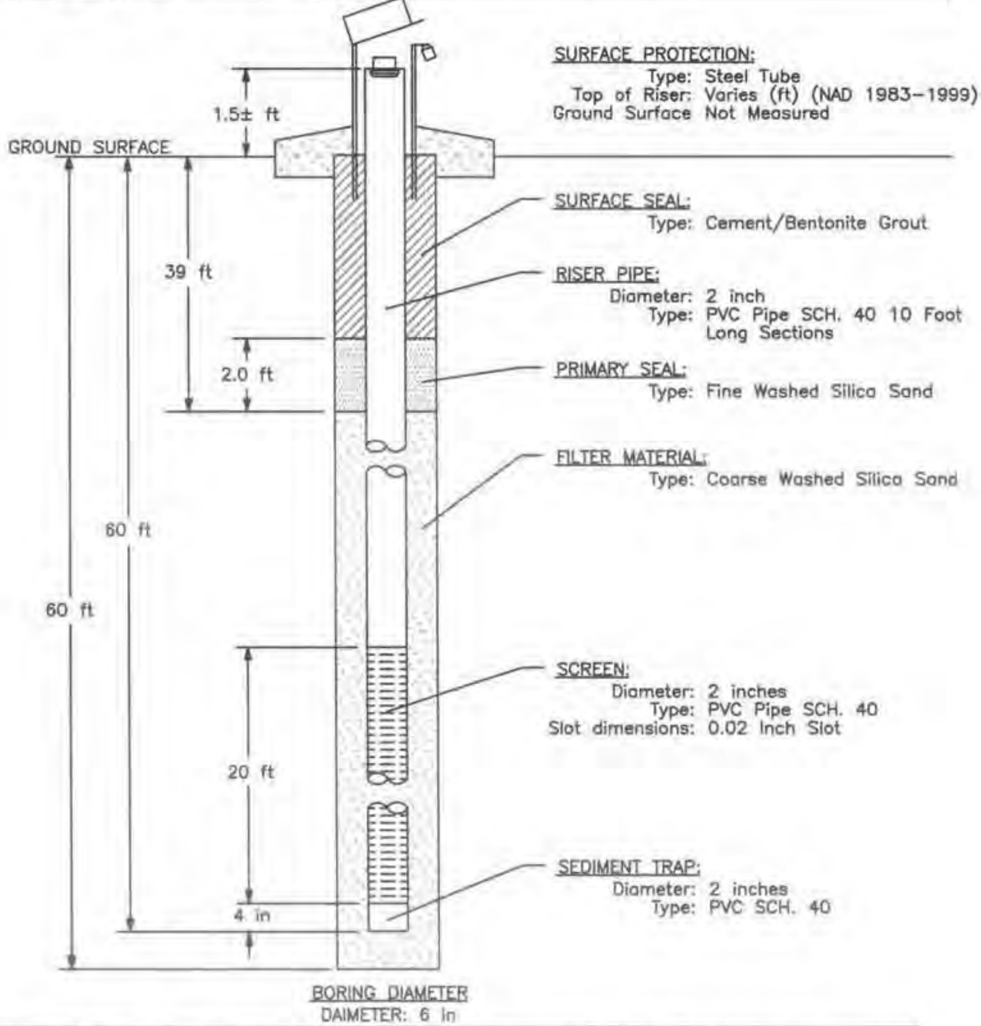
INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

216

Hole No. CP05-EAARS-TW-0208

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774408, E 759697		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0208		11. Date Hole: Started 3-15-05 Completed 3-15-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.39
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

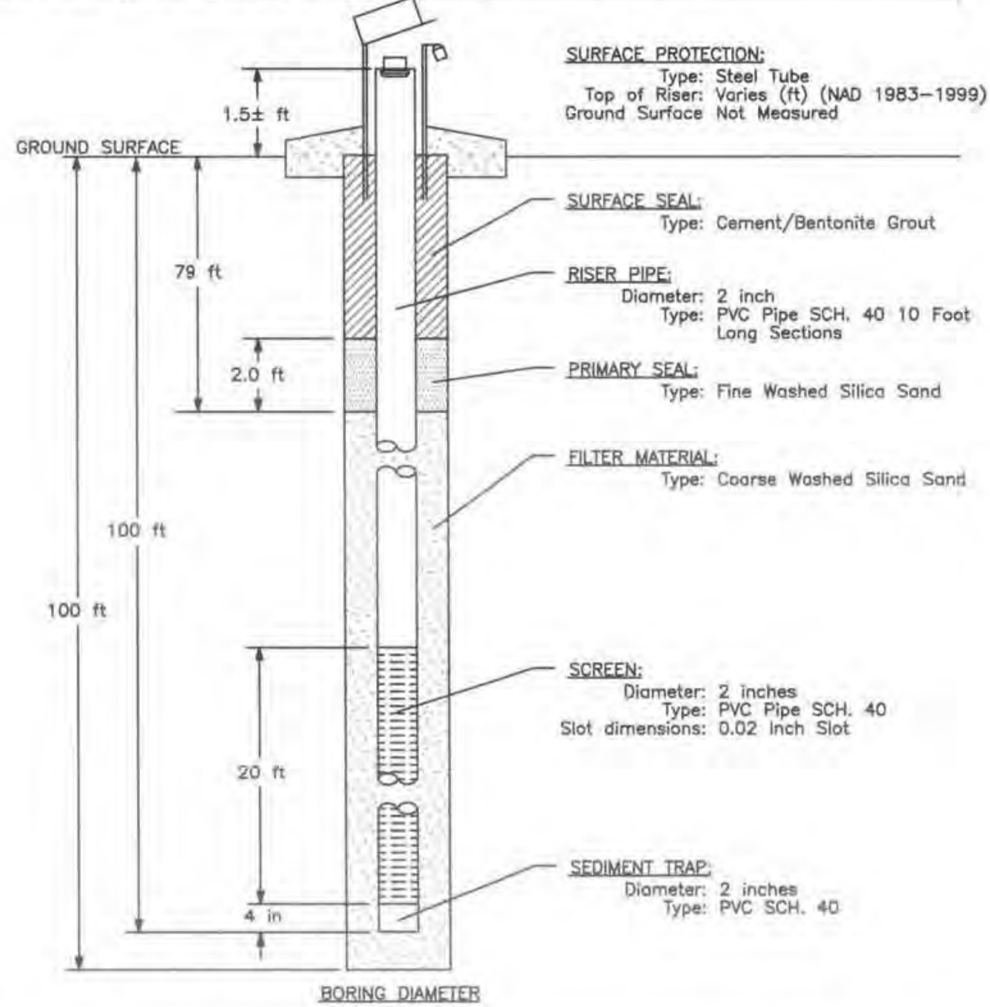


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0209

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774418, E 759697		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0209		11. Date Hole: Started 3–15–05 Completed 3–15–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.45
6. Depth of Piezometer: 100 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

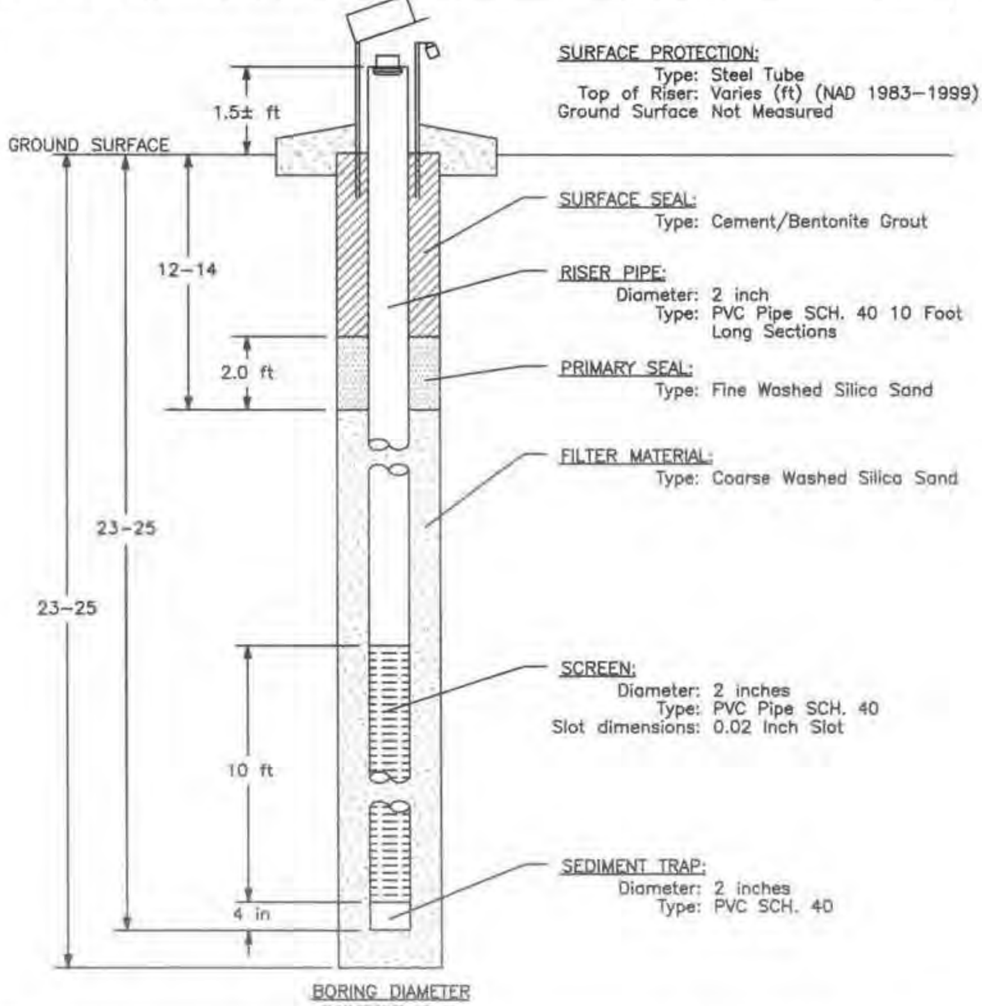


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0210

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774488, E 759697		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0210		11. Date Hole: Started 3-15-05 Completed 3-15-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.48
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

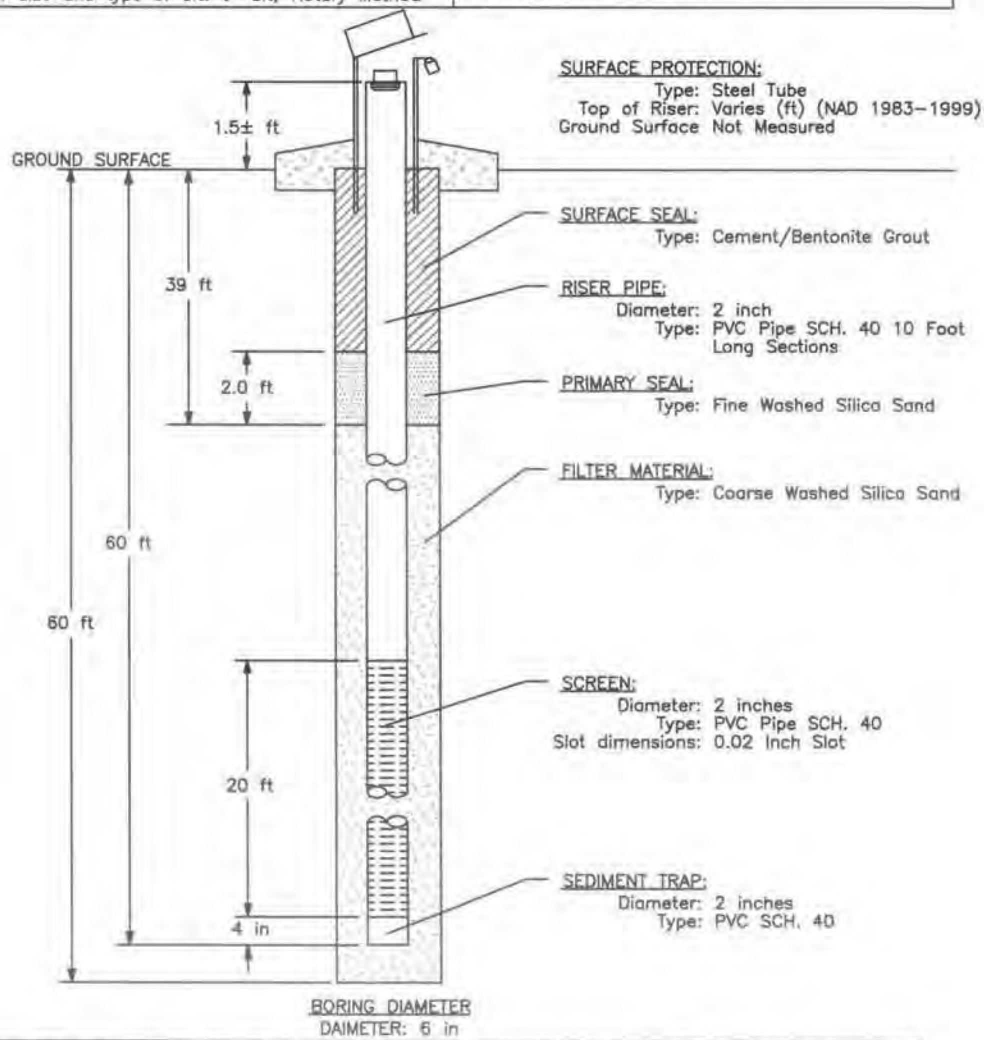


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No, CP05-EAARS-TW-0211

PIEZOMETER LOG — Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N 774498, E 759697	9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0211	11. Date Hole: Started 3-15-05 Completed 3-15-05
5. Name of Driller: Nodarse & Associates, Inc.	12. Elevation Top of Riser: 9.32
6. Depth of Piezometer: 60 ft	13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method	

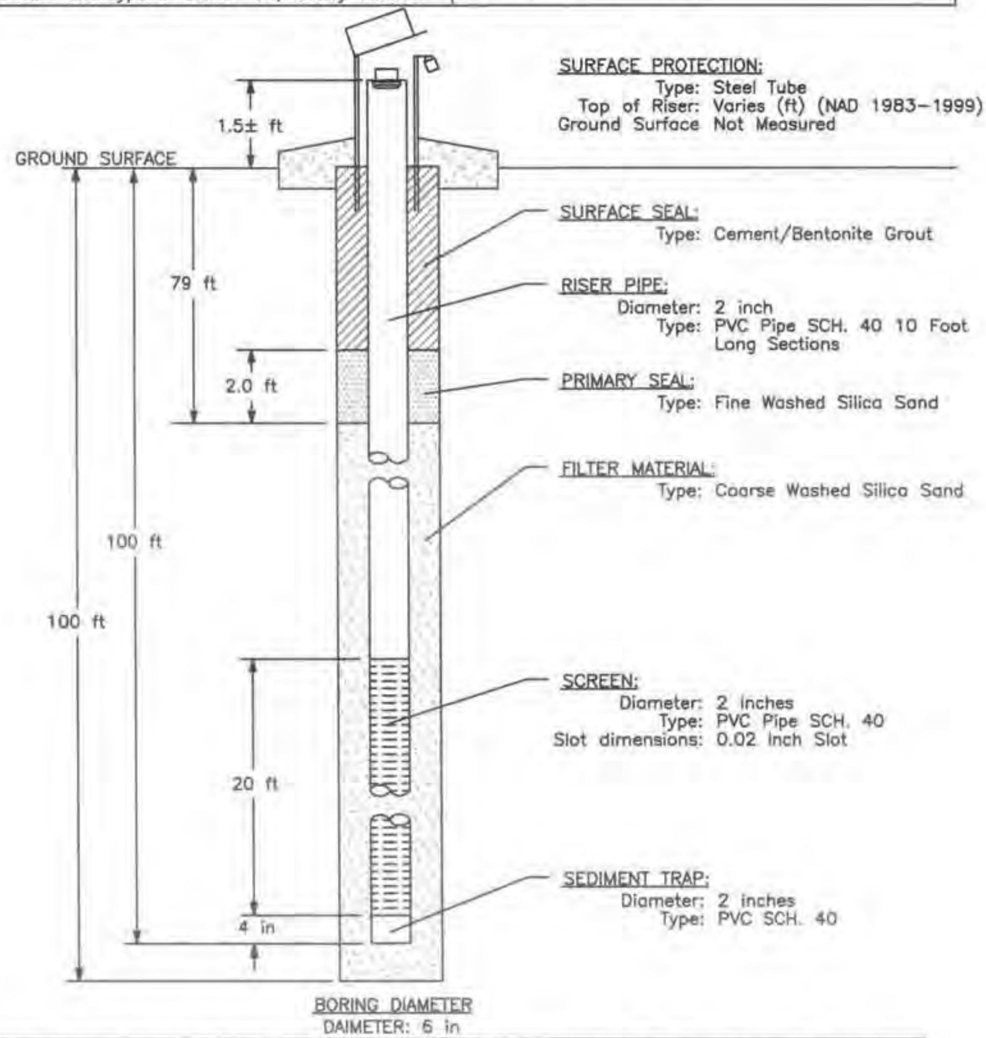


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0212

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774508, E 759697		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0212		11. Date Hole: Started 3–15–05 Completed 3–15–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.32
6. Depth of Piezometer: 100 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

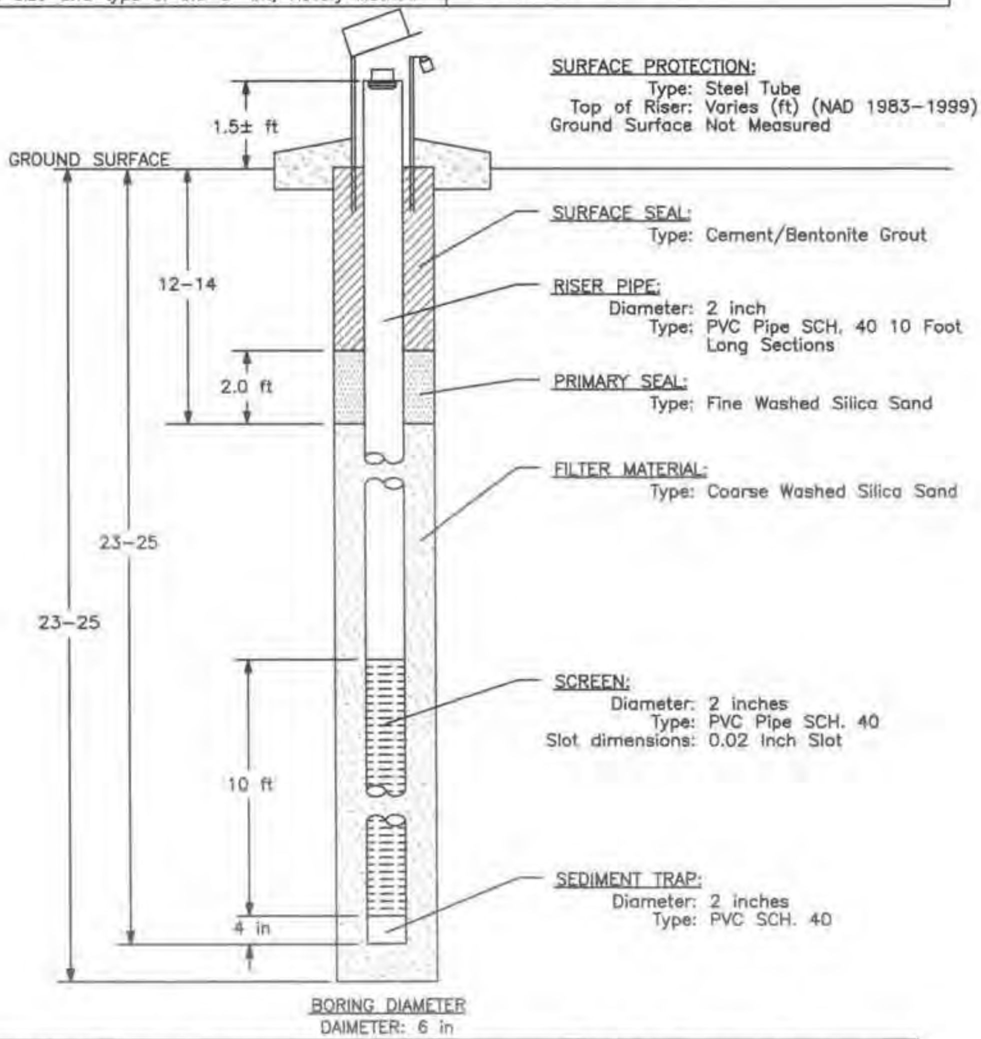


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0213

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774074, E 760028		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0213		11. Date Hole: Started 3-15-05 Completed 3-15-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.63
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

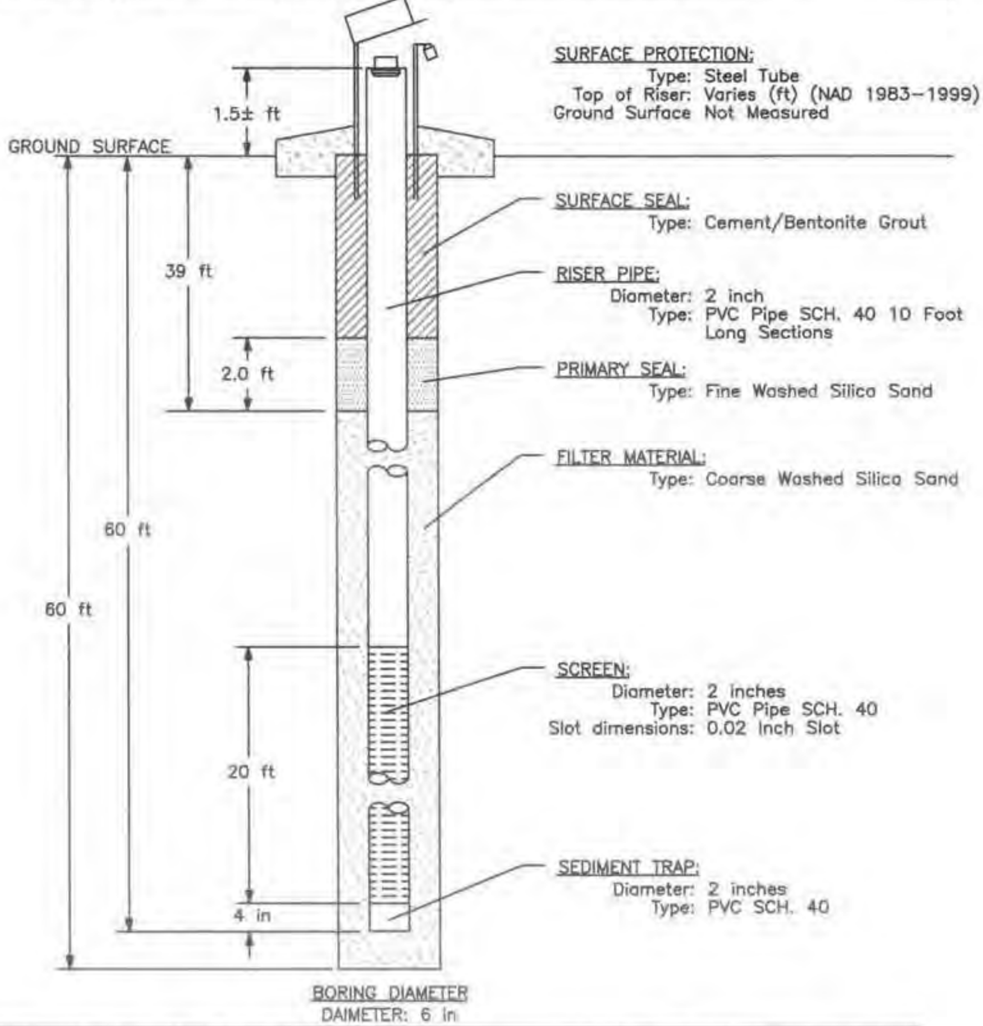


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0214

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774074, E 760038		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0214		11. Date Hole: Started 3–15–05 Completed 3–15–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.57
6. Depth of Piezometer: 60 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

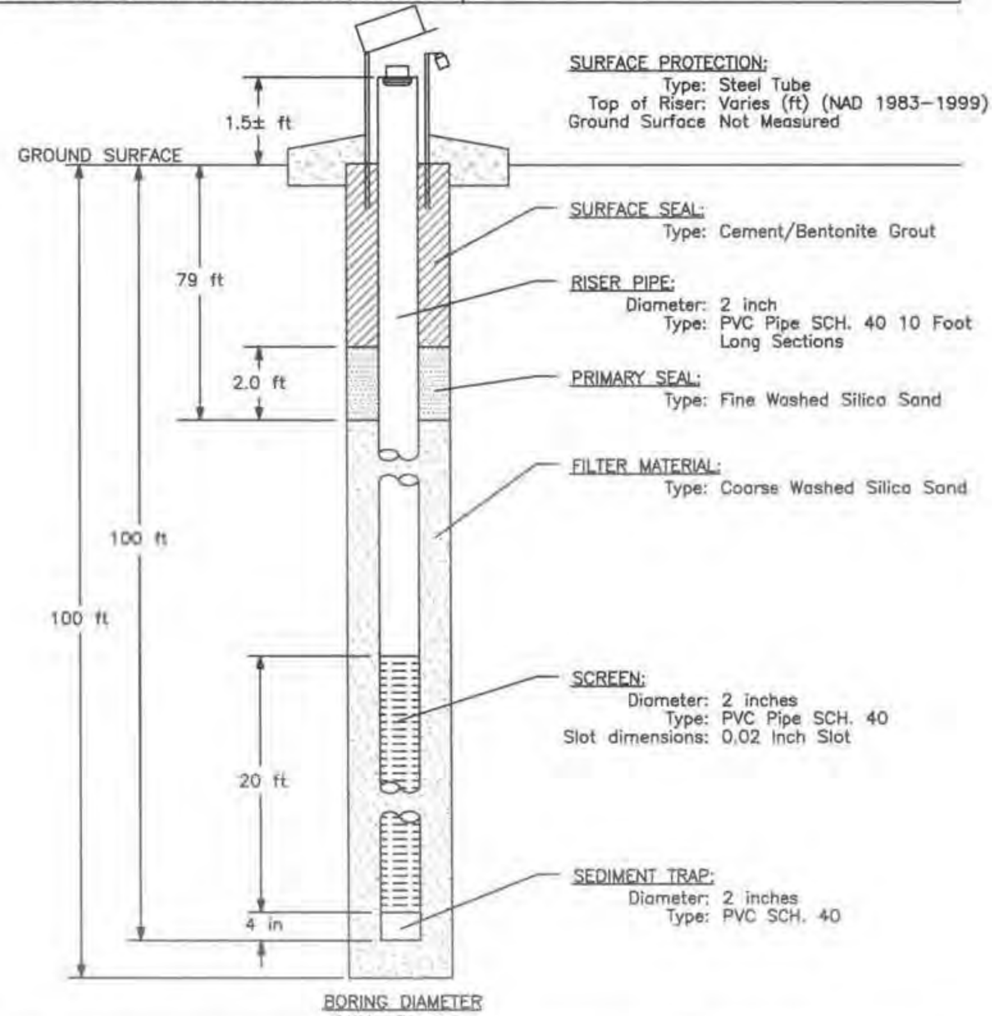


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No, CP05–EAARS–TW–0215

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774074, E 760048		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0215		11. Date Hole: Started 3–15–05 Completed 3–15–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.19
6. Depth of Piezometer: 100 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

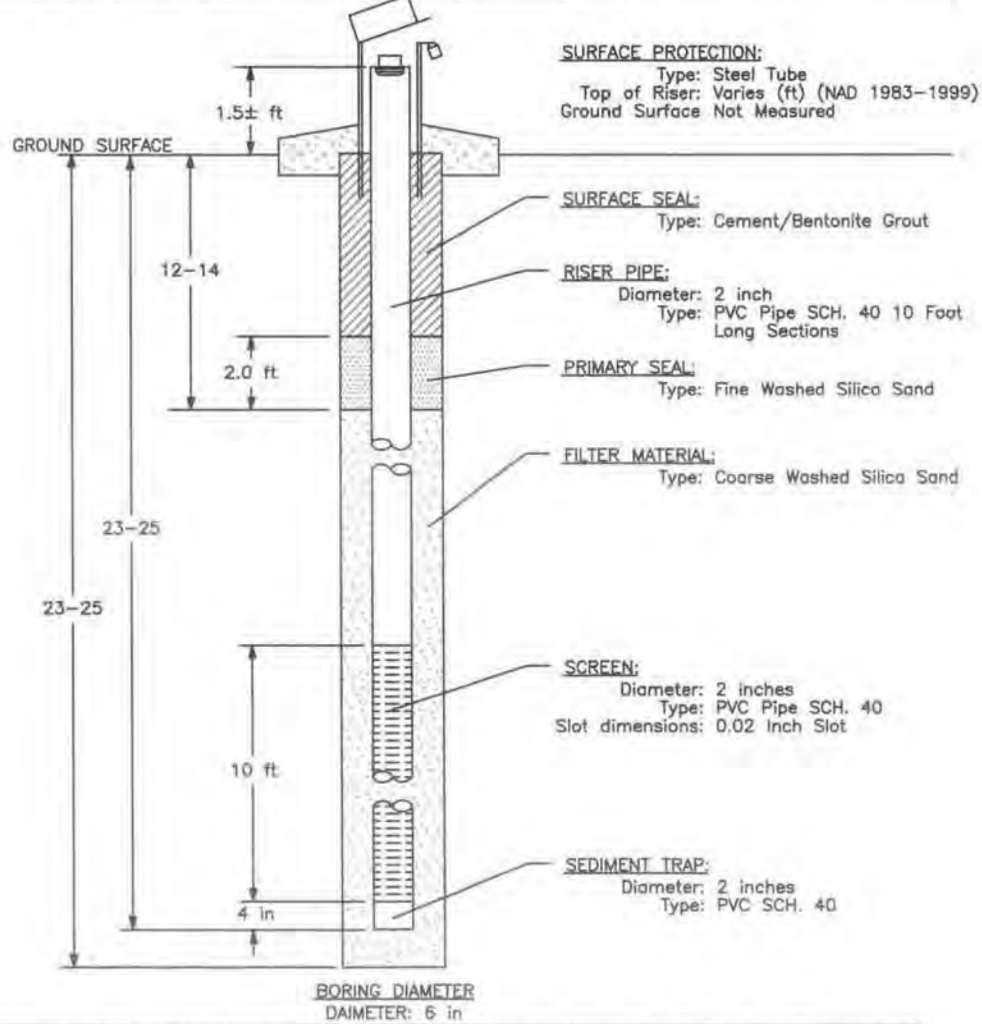


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0216

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774074, E 760118		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0216		11. Date Hole: Started 3–16–05 Completed 3–16–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.40
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

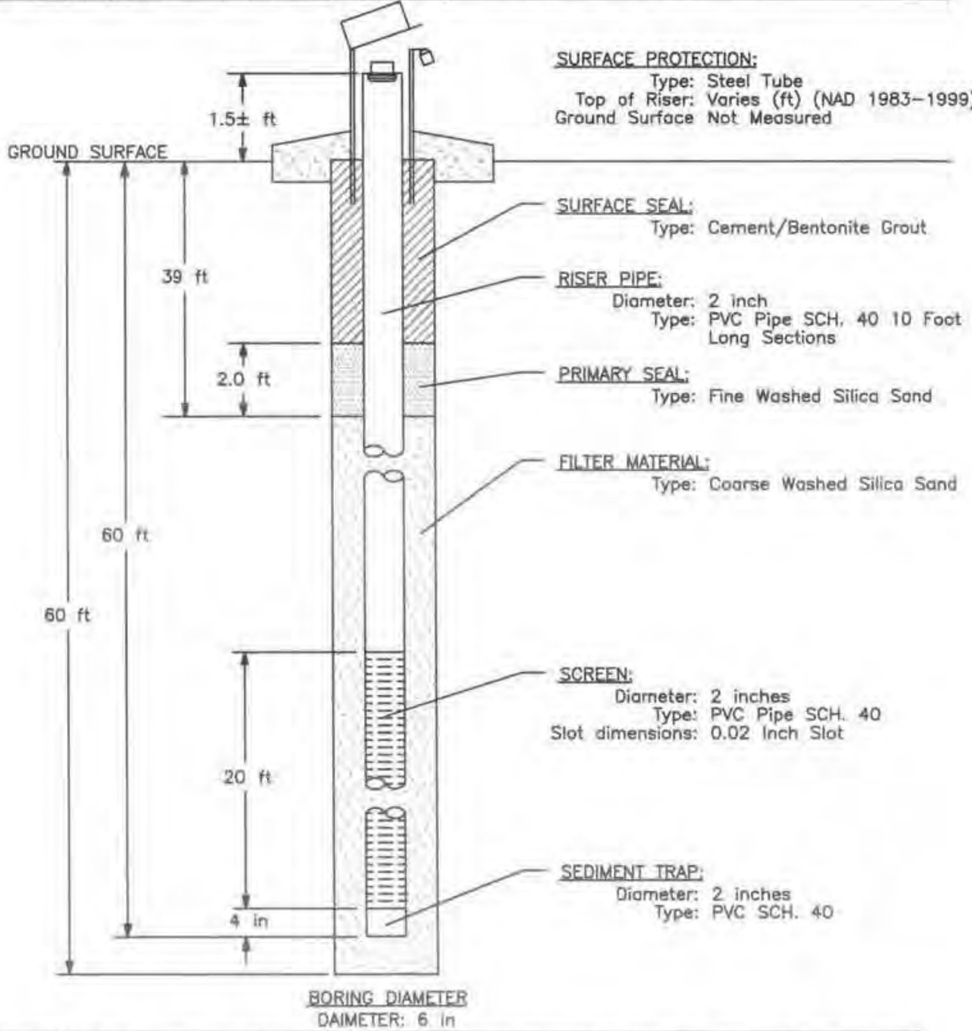


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0217

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774074, E 760128		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0217		11. Date Hole: Started 3-16-05 Completed 3-16-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.04
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

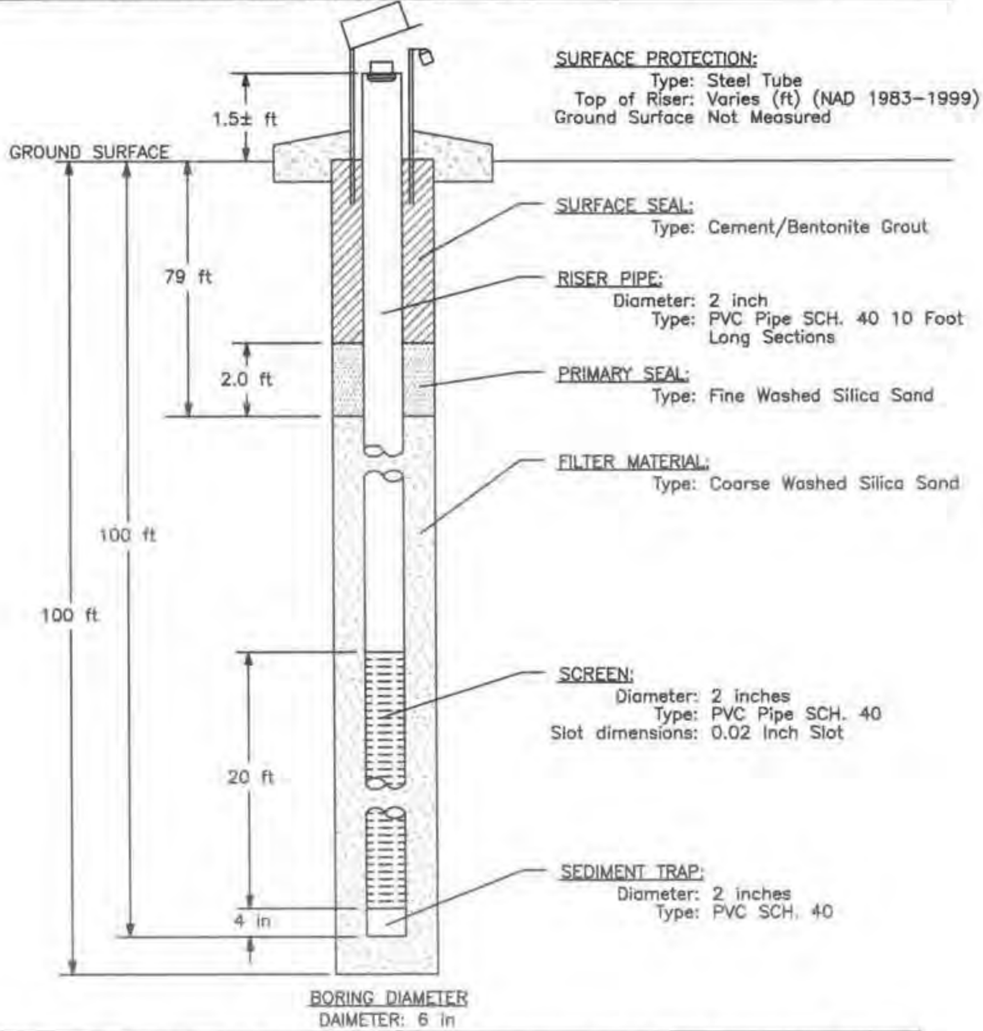


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0218

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774074, E 760138		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0218		11. Date Hole: Started 3-16-05 Completed 3-16-05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 7.81
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

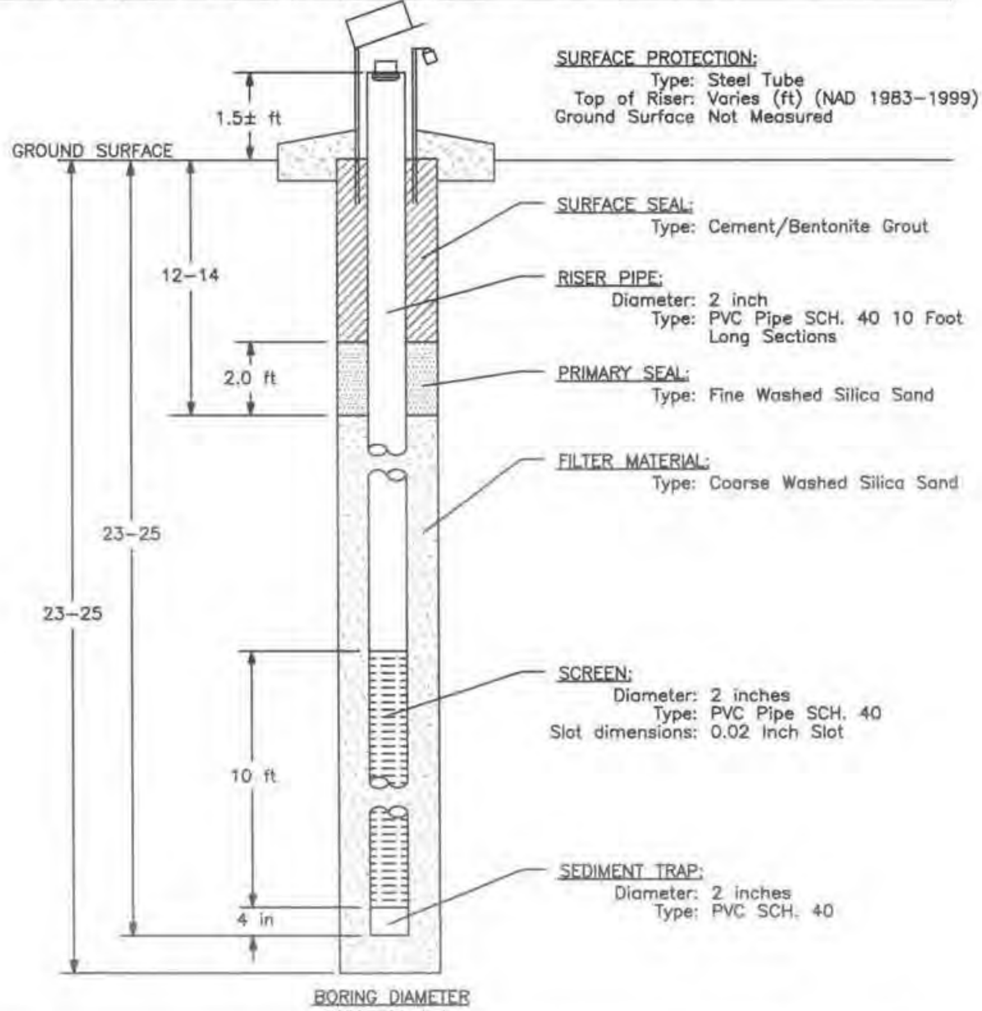


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0219

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 773747, E 759701		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0219		11. Date Hole: Started 3–2–05 Completed 3–2–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.75
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5 feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

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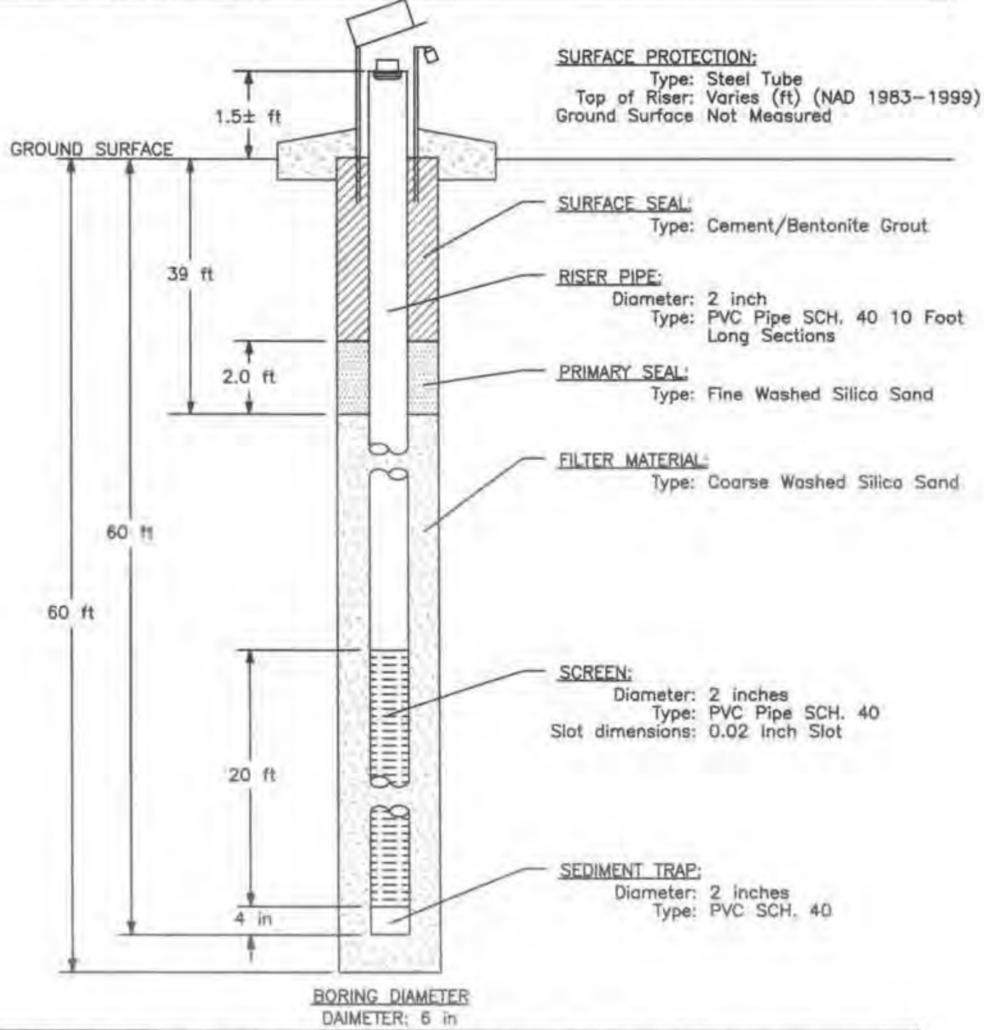
Hole No. CP05-EAARS-TW-0220

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 773737, E 759701		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0220		11. Date Hole: Started 3-3-05 Completed 3-3-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.27
6. Depth of Piezometer: 60 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

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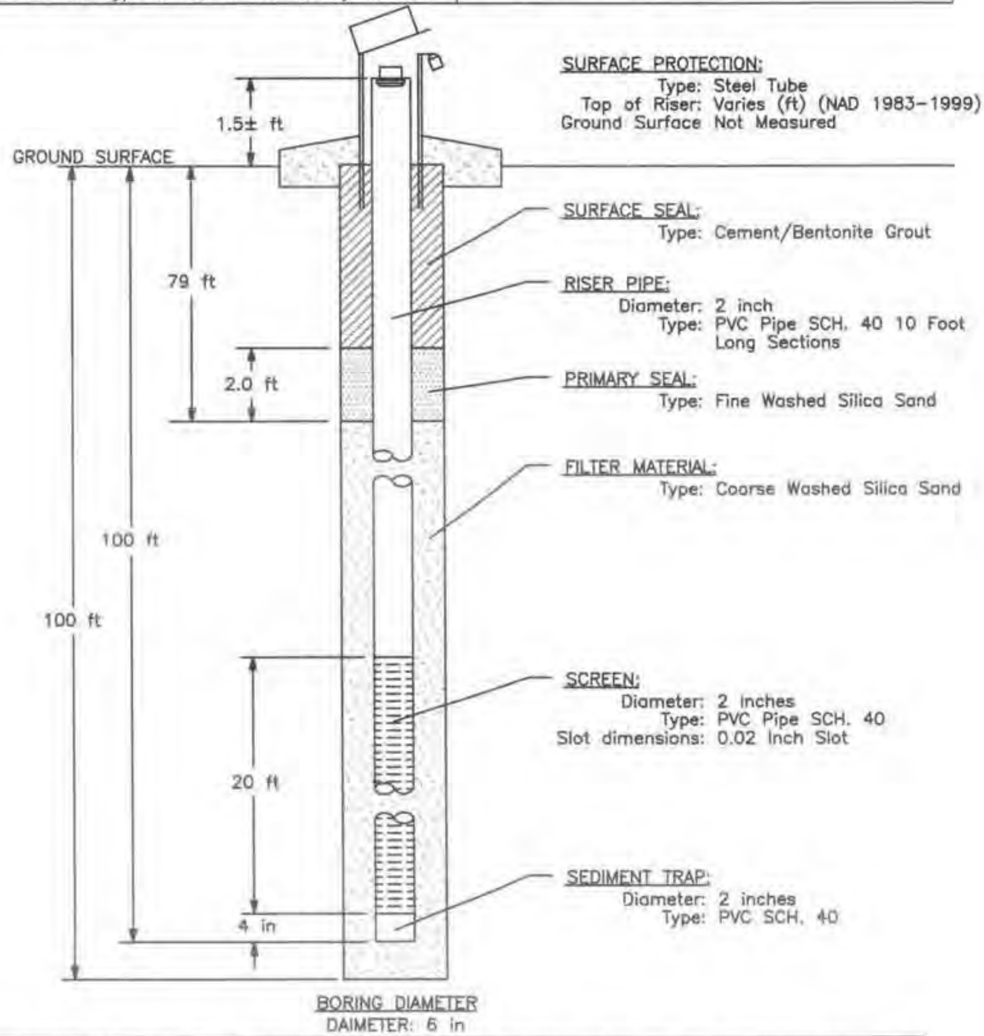
APPENDIX 1
TEST CELL BORINGS AND PIEZOMETER INSTALLATION LOGS: 221-240

Hole No. CP05-EAARS-TW-0221

PIEZOMETER LOG / Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N 773727, E 759701	9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0221	11. Date Hole: Started 3-3-05 Completed 3-3-05
5. Name of Driller: Nodarse & Associates, Inc.	
6. Depth of Piezometer: 100 ft	12. Elevation Top of Riser: 9.30
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst

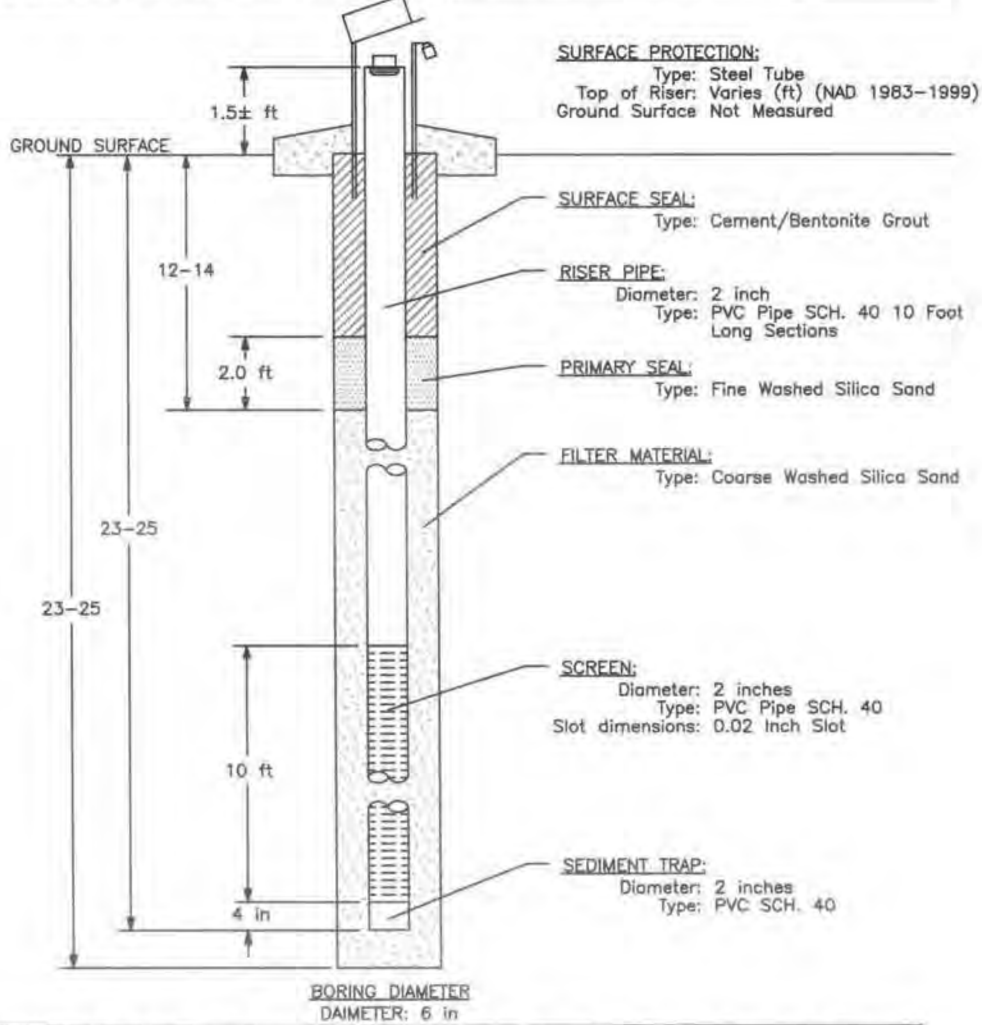


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0222

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 773657, E 759701		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0222		11. Date Hole: Started 3–5–05 Completed 3–5–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.79
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

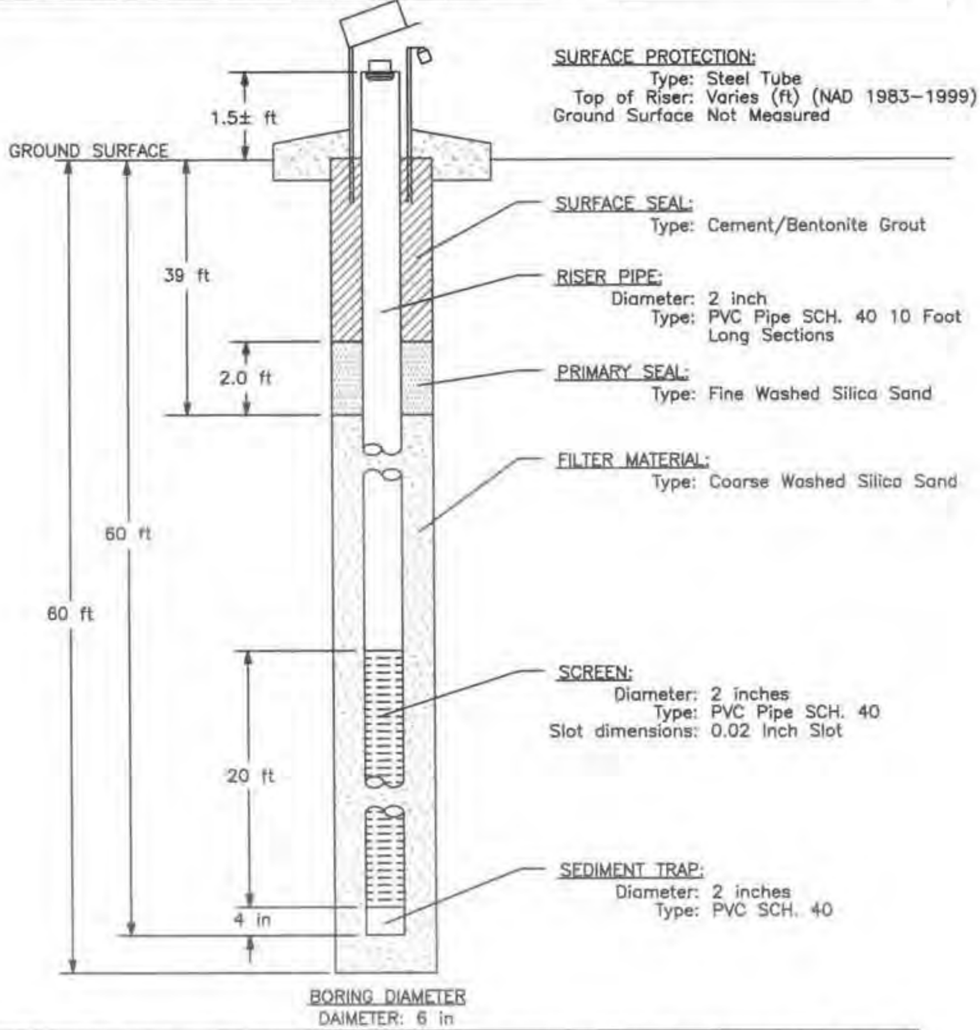


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No, CP05-EAARS-TW-0223

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 773647, E 759701		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0223		11. Date Hole: Started 3-5-05 Completed 3-5-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 7.75
6. Depth of Piezometer: 60 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



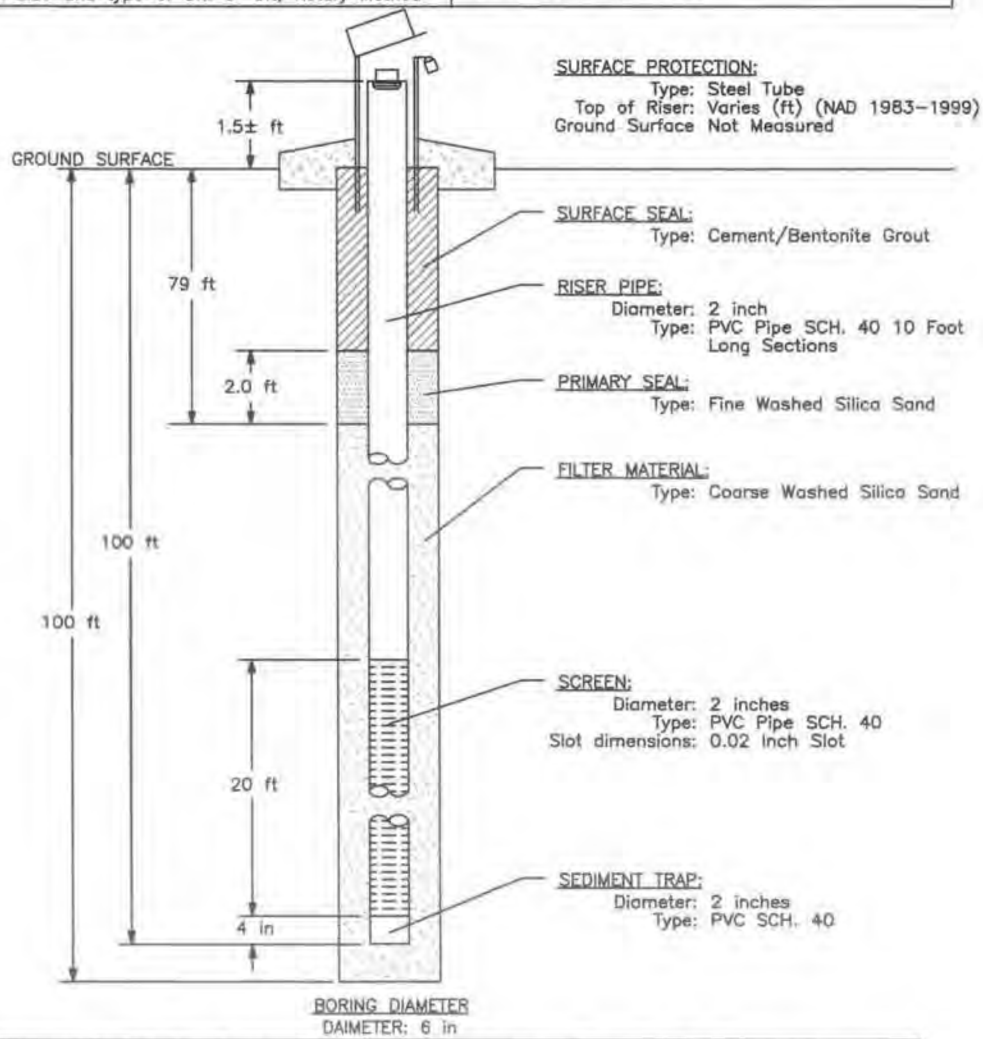
INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

233

Hole No. CP05-EAARS-TW-0224

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 773637, E 759701		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0224		11. Date Hole: Started 3-5-05 Completed 3-5-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 7.92
6. Depth of Piezometer: 100 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

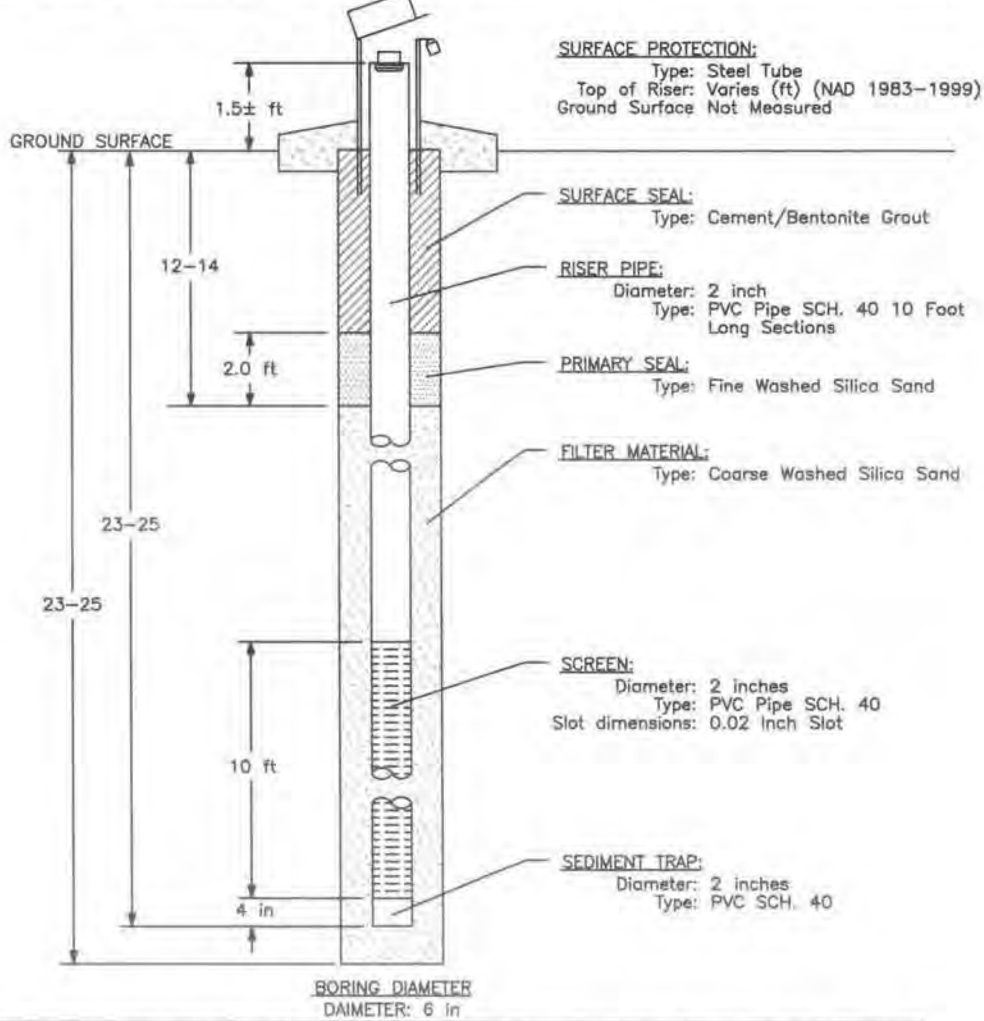


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0225

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774070, E 759370		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0225		11. Date Hole: Started 3-10-05 Completed 3-10-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.41
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

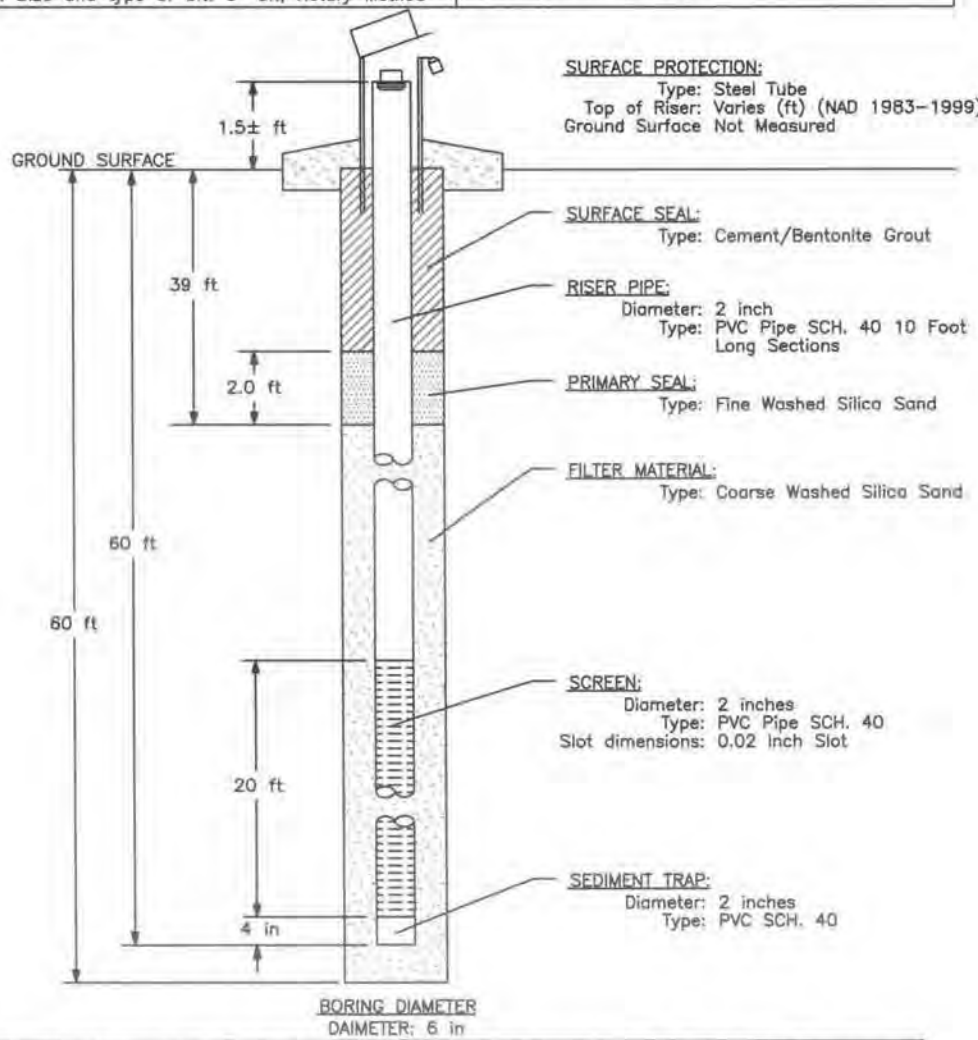
NOTES: Typical 25 foot Piezometer Installation

APPENDIX 2

APPENDIX 2
SUPPLEMENTAL BORINGS AND PIEZOMETER INSTALLATION LOGS: 255-260

Hole No. CP05-EAARS-TW-0226

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774070, E 759360		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0226		11. Date Hole: Started 3-10-05 Completed 3-10-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.25
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

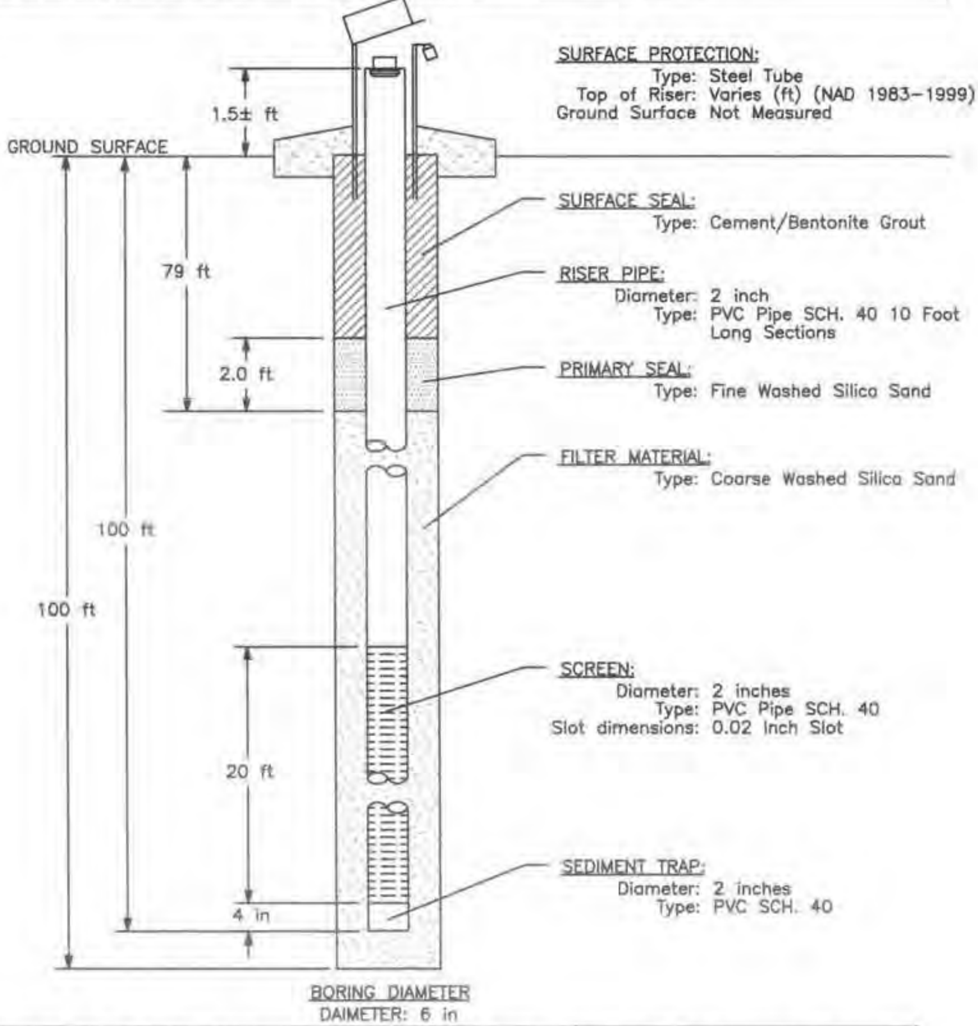


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0227

PIEZOMETER LOG / Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N 774070, E 759350	9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0227	11. Date Hole: Started 3-10-05 Completed 3-10-05
5. Name of Driller: Nodarse & Associates, Inc.	12. Elevation Top of Riser: 8.38
6. Depth of Piezometer: 100 ft	
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst

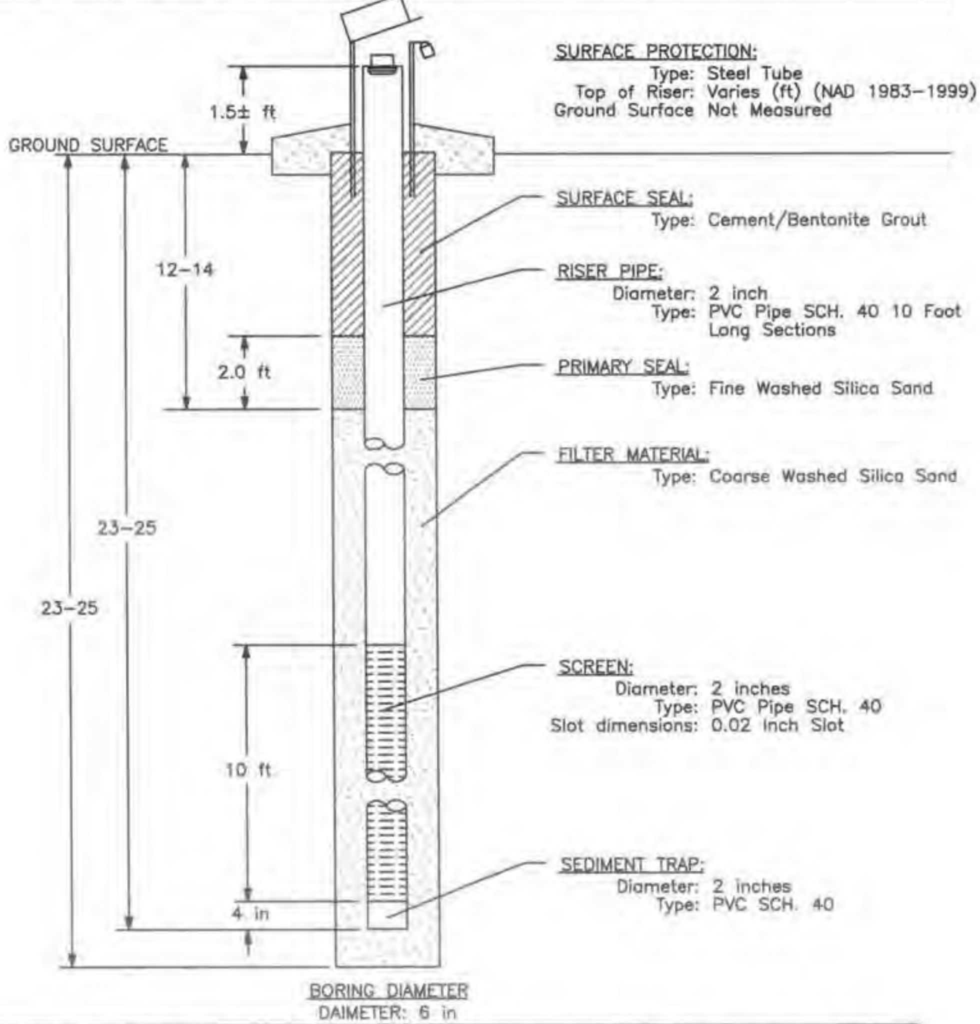


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0228

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774070, E 759280		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0228		11. Date Hole: Started 3-10-05 Completed 3-10-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.52
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

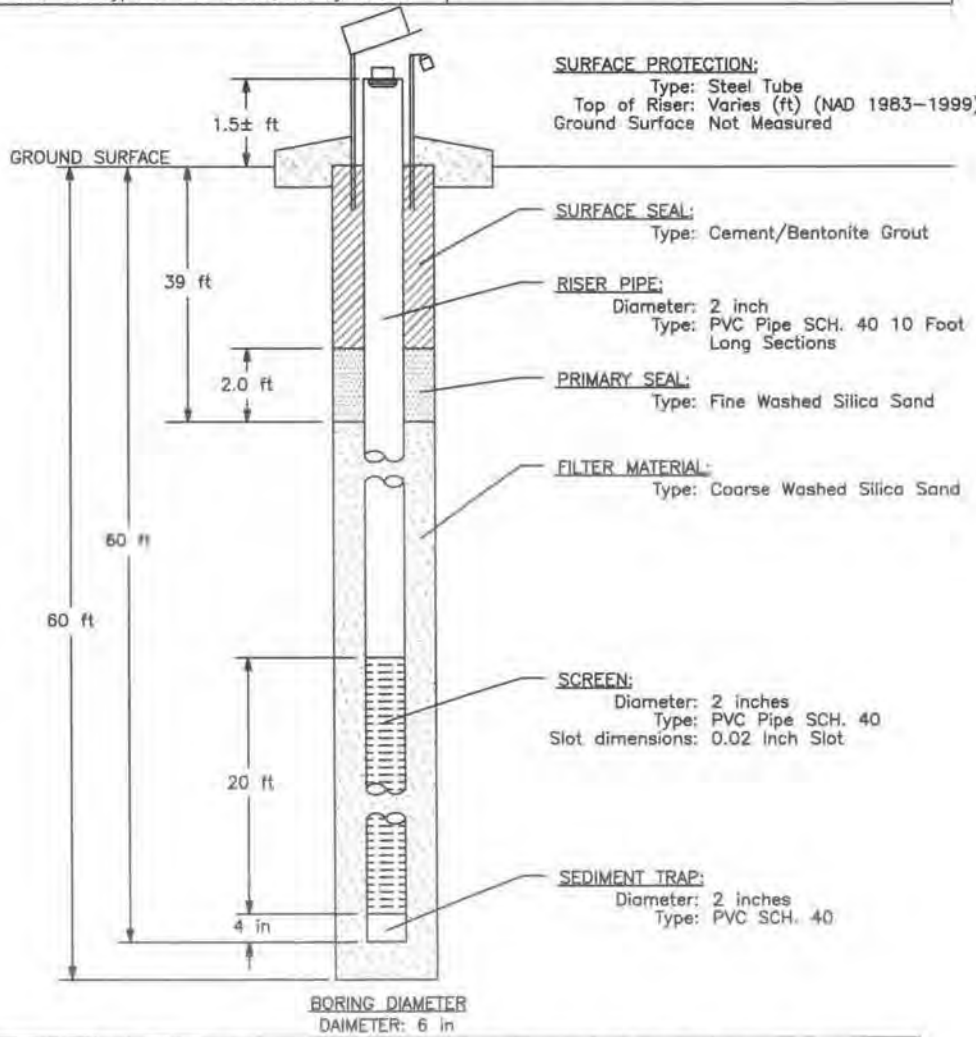


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No, CP05-EAARS-TW-0229

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774070, E 759270		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
229		11. Date Hole: Started 3-10-05 Completed 3-10-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.23
6. Depth of Piezometer: 60 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

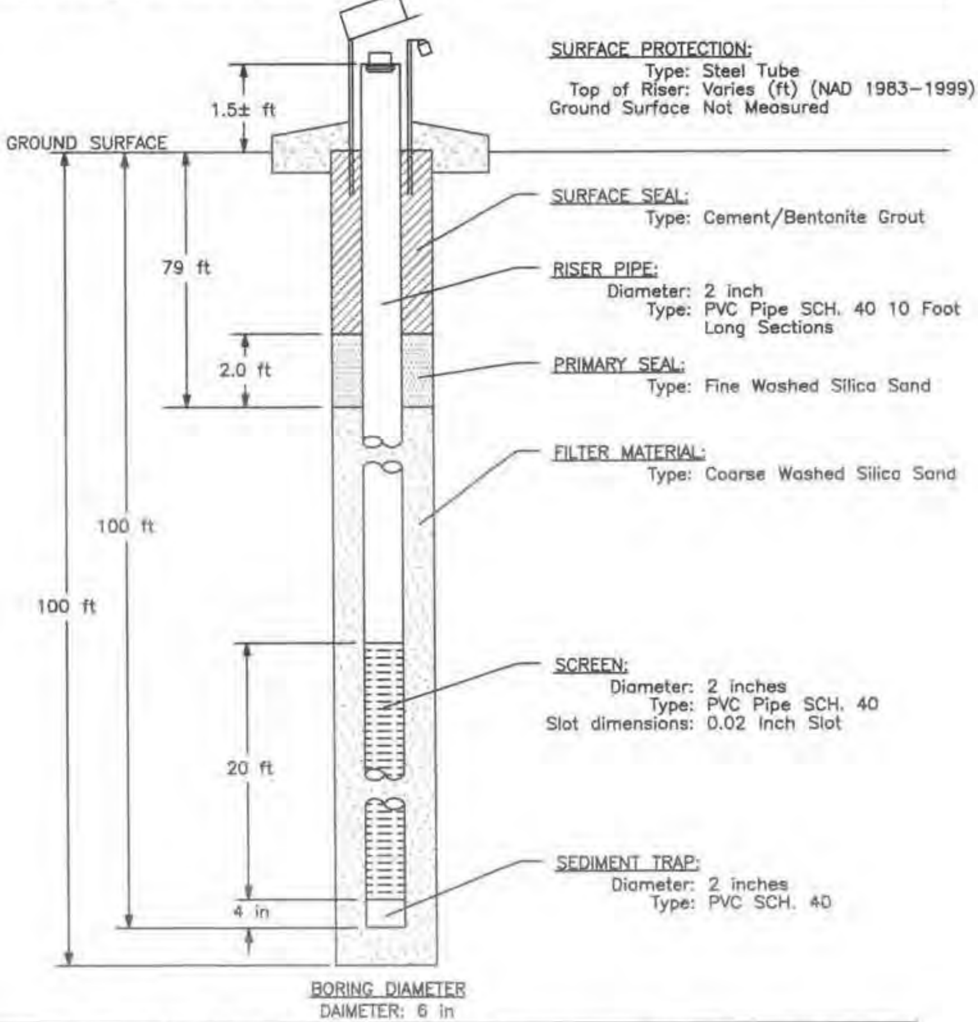


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0230

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774070, E 759260		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0230		11. Date Hole: Started 3-10-05 Completed 3-10-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.47
6. Depth of Piezometer: 100 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

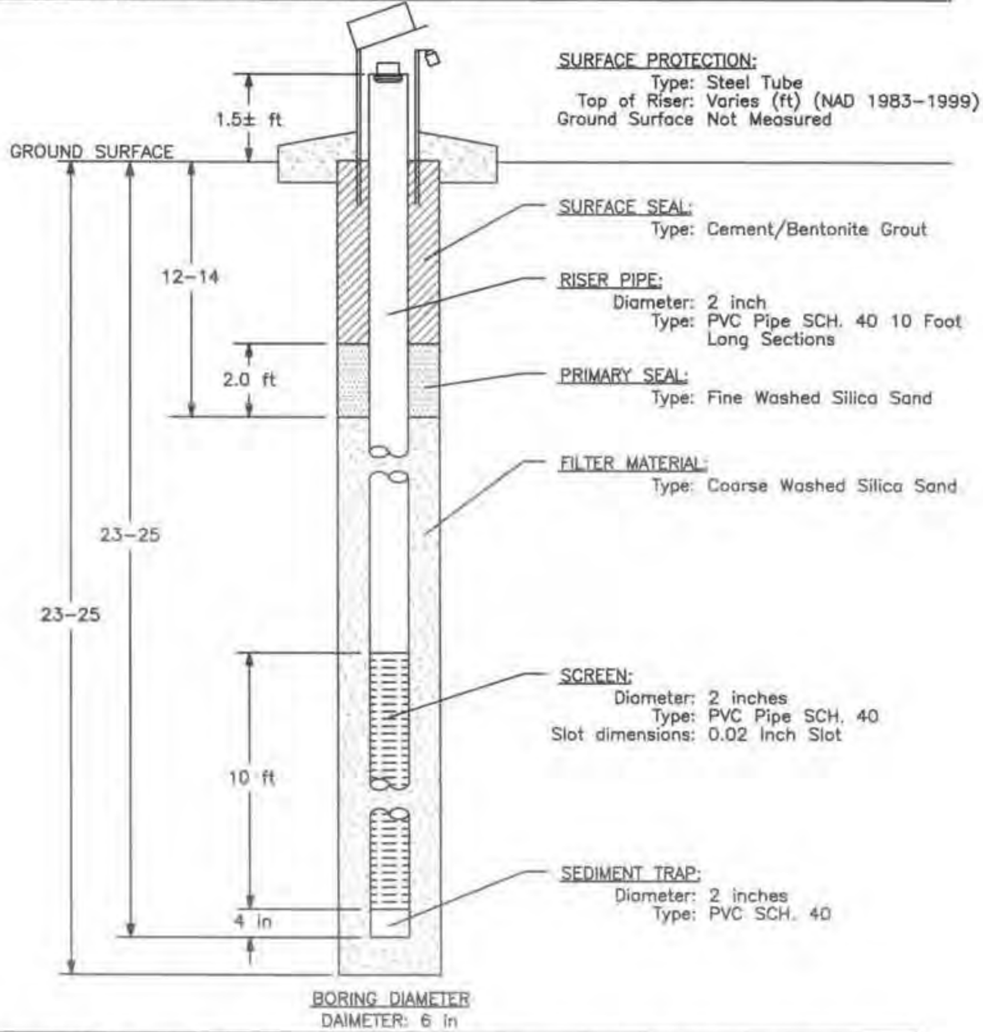


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No, CP05–EAARS–TW–0231

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774415, E 761772		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0231		11. Date Hole: Started 3–21–05 Completed 3–21–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.23
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

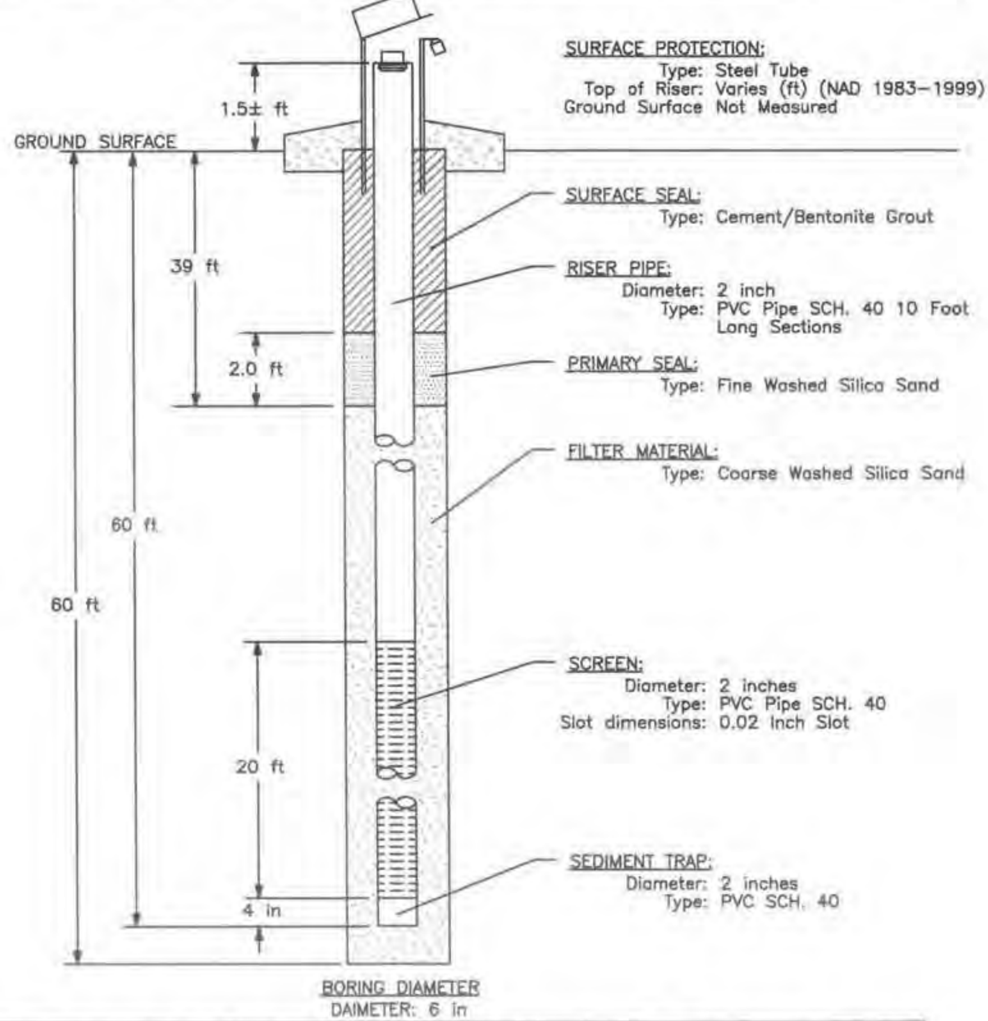


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer installation

Hole No. CP05-EAARS-TW-0232

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774415, E 761782		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0232		11. Date Hole: Started 3-21-05 Completed 3-21-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.09
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

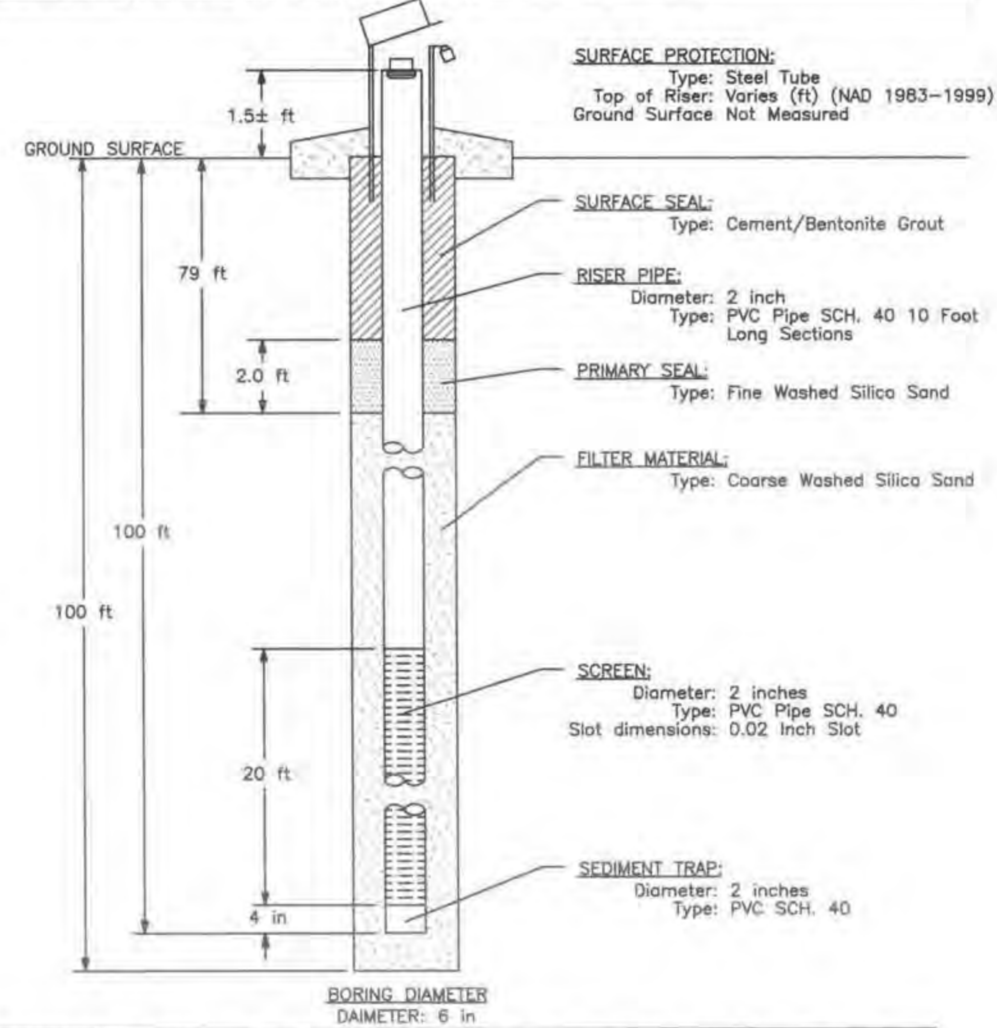


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0233

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774415, E 761792		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0233		11. Date Hole: Started 3-21-05 Completed 3-21-05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 9.06
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

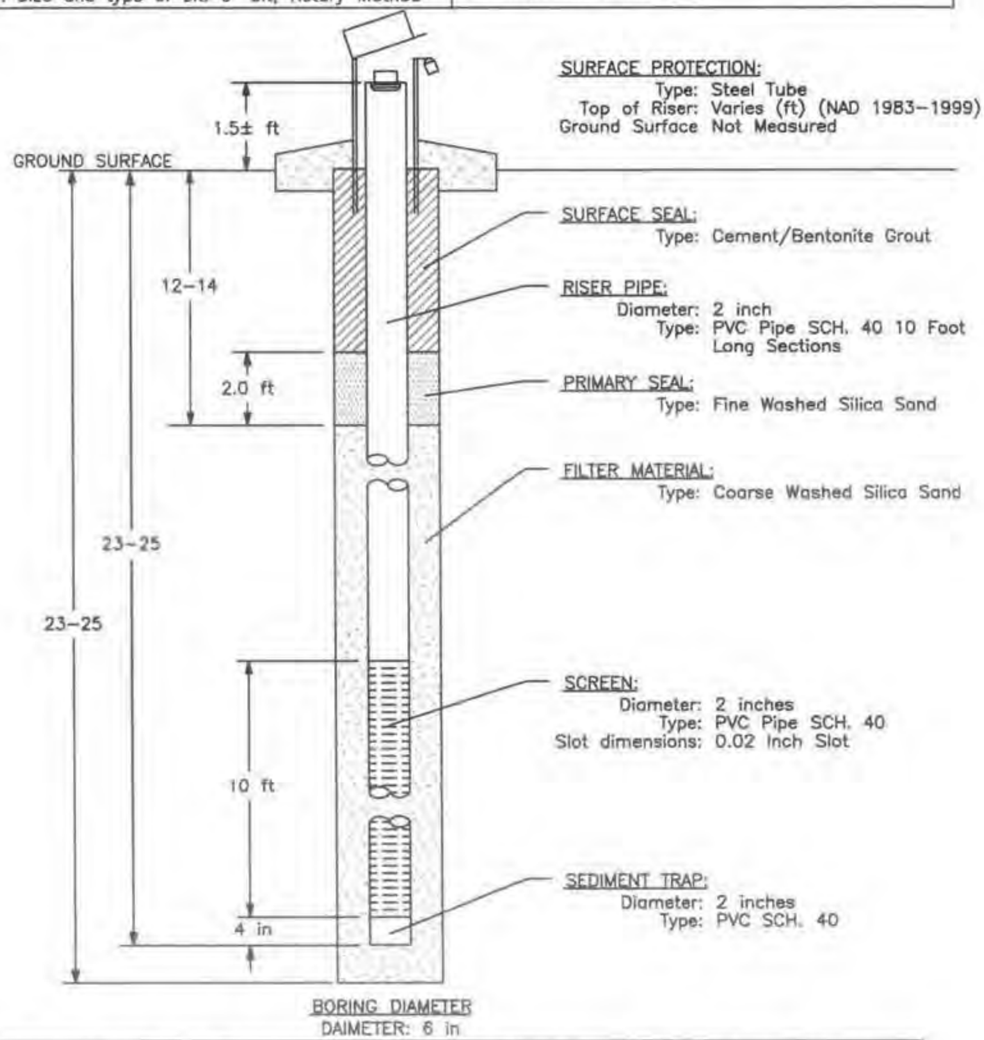


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5 feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0234

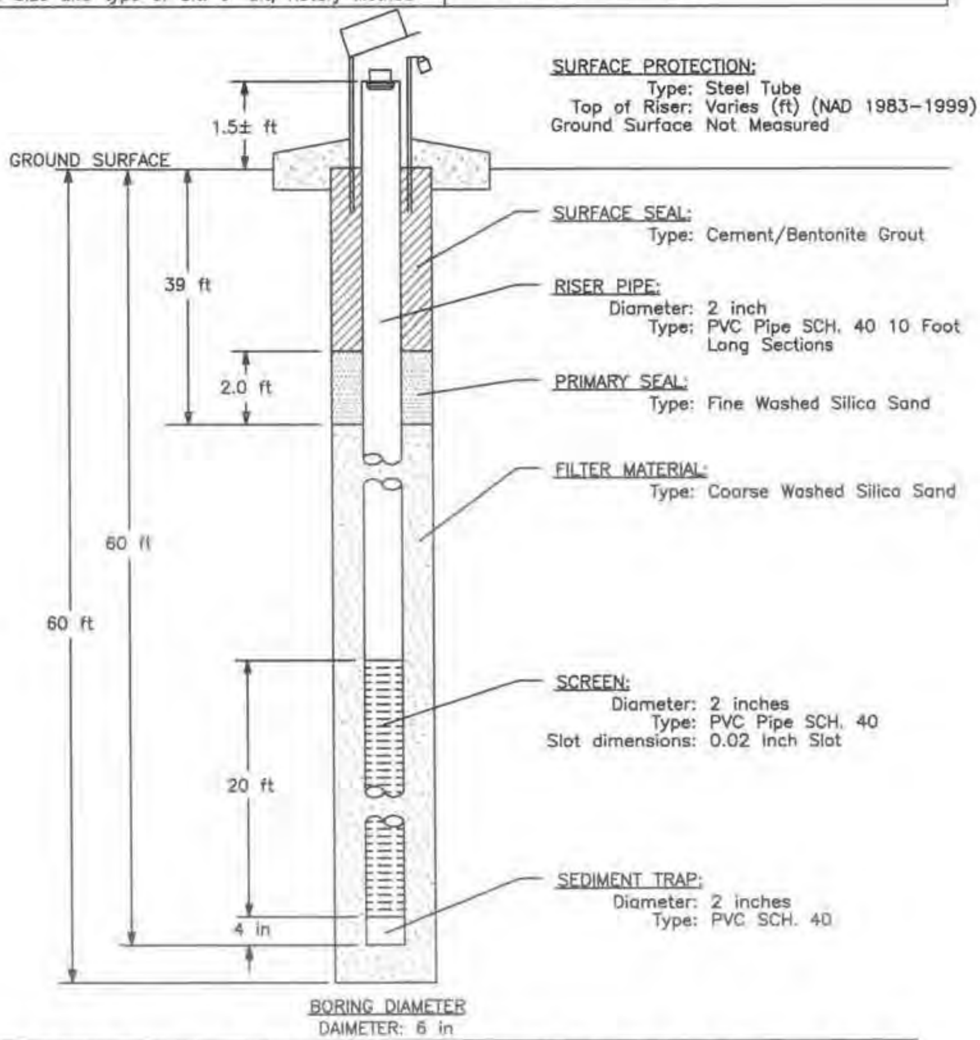
PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774515, E 761772		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0234		11. Date Hole: Started 3-17-05 Completed 3-17-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 10.09
6. Depth of Piezometer: 25 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.
NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0235

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774515, E 761782		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0235		11. Date Hole: Started 3-16-05 Completed 3-16-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.98
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

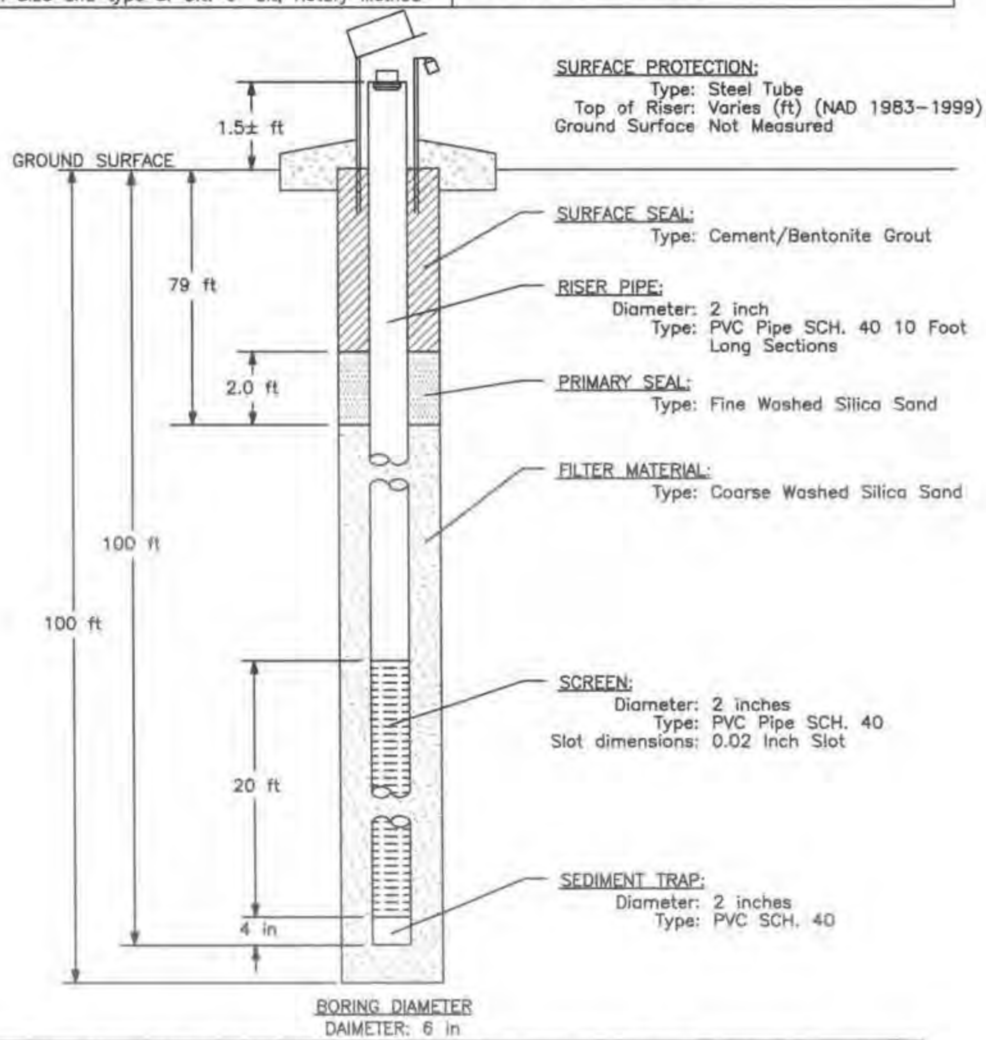


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0236

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774515, E 761792		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0236		11. Date Hole: Started 3–17–05 Completed 3–17–05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.90
6. Depth of Piezometer: 100 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

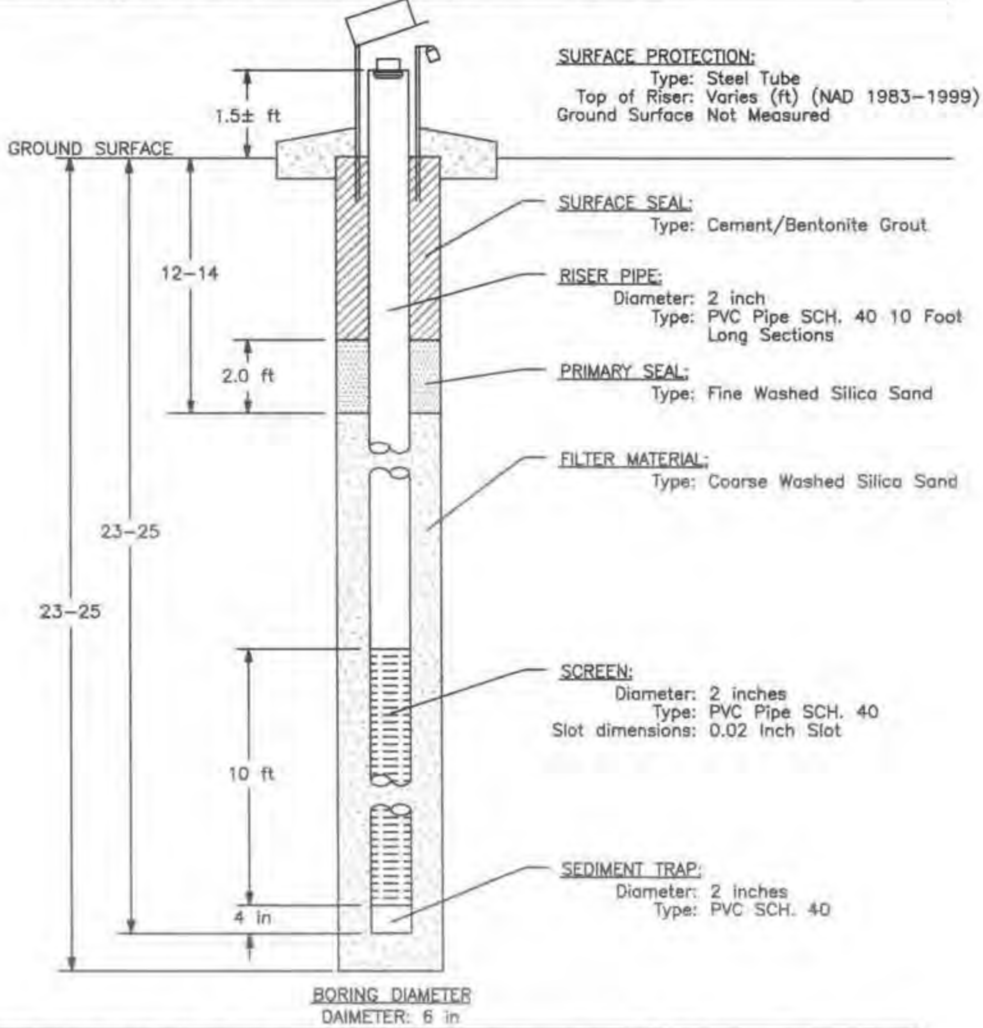


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0237

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774071, E 762123		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0237		11. Date Hole: Started 12/7/2004 Completed 12/7/2004
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.04
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer installation

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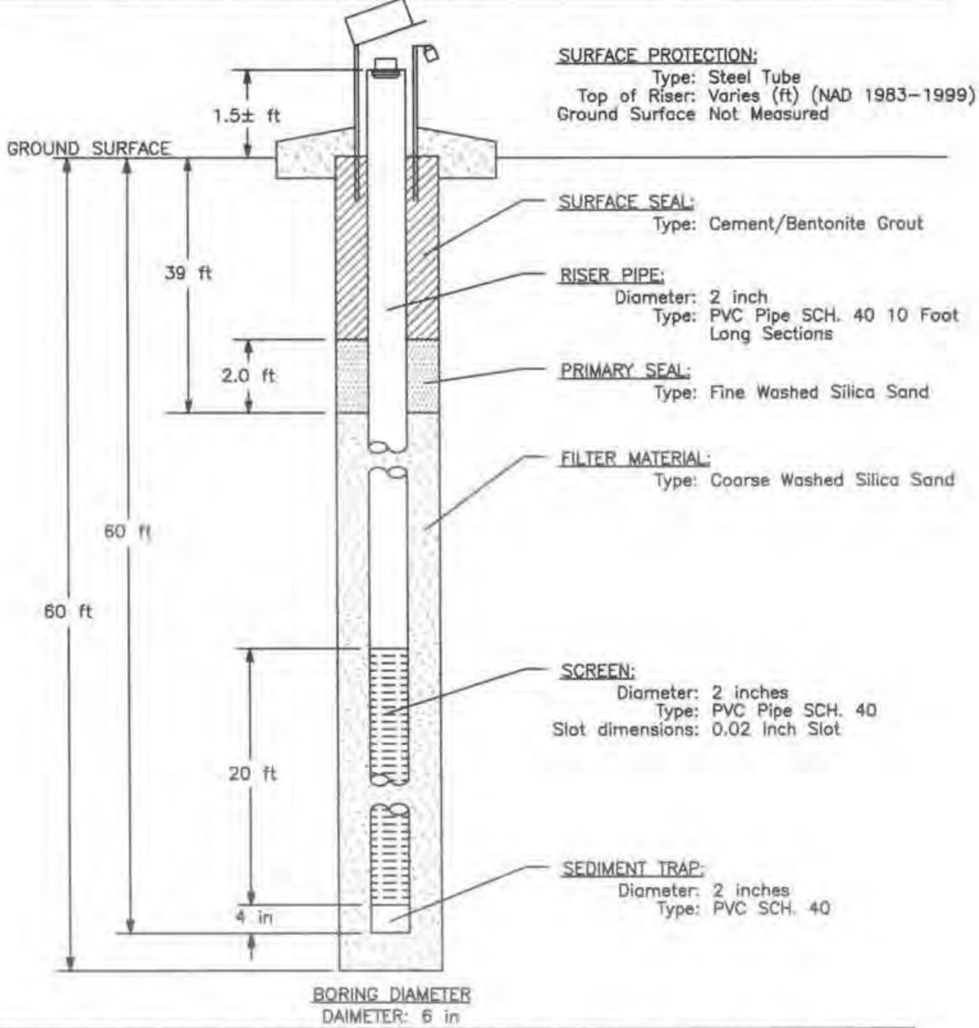
Hole No. CP05-EAARS-TW-0238

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774081, E 762123		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0238		11. Date Hole: Started 3-26-05 Completed 3-26-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.87
6. Depth of Piezometer: 60 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		

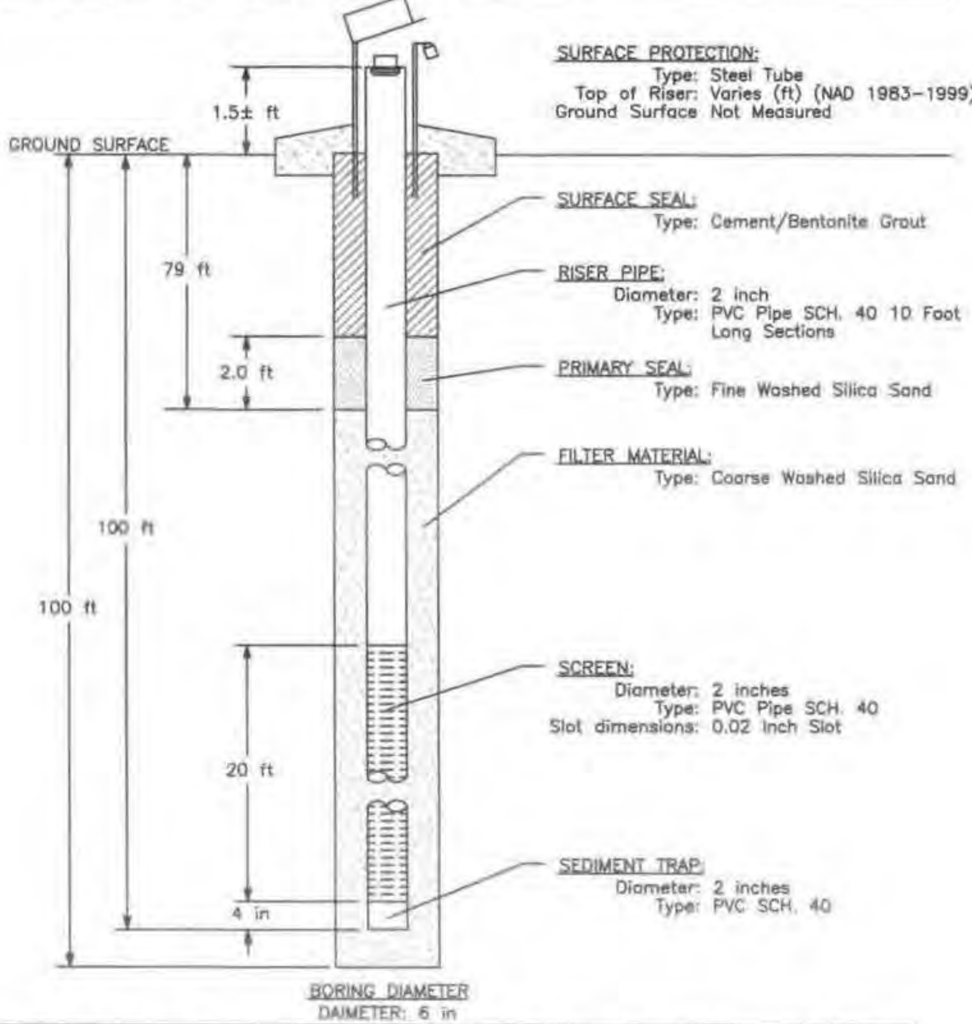


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0239

PIEZOMETER LOG Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N 774091, E 762123	9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0239	11. Date Hole: Started 3-26-05 Completed 3-26-05
5. Name of Driller: Nodarse & Associates, Inc.	
6. Depth of Piezometer: 100 ft	12. Elevation Top of Riser: 8.95
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst

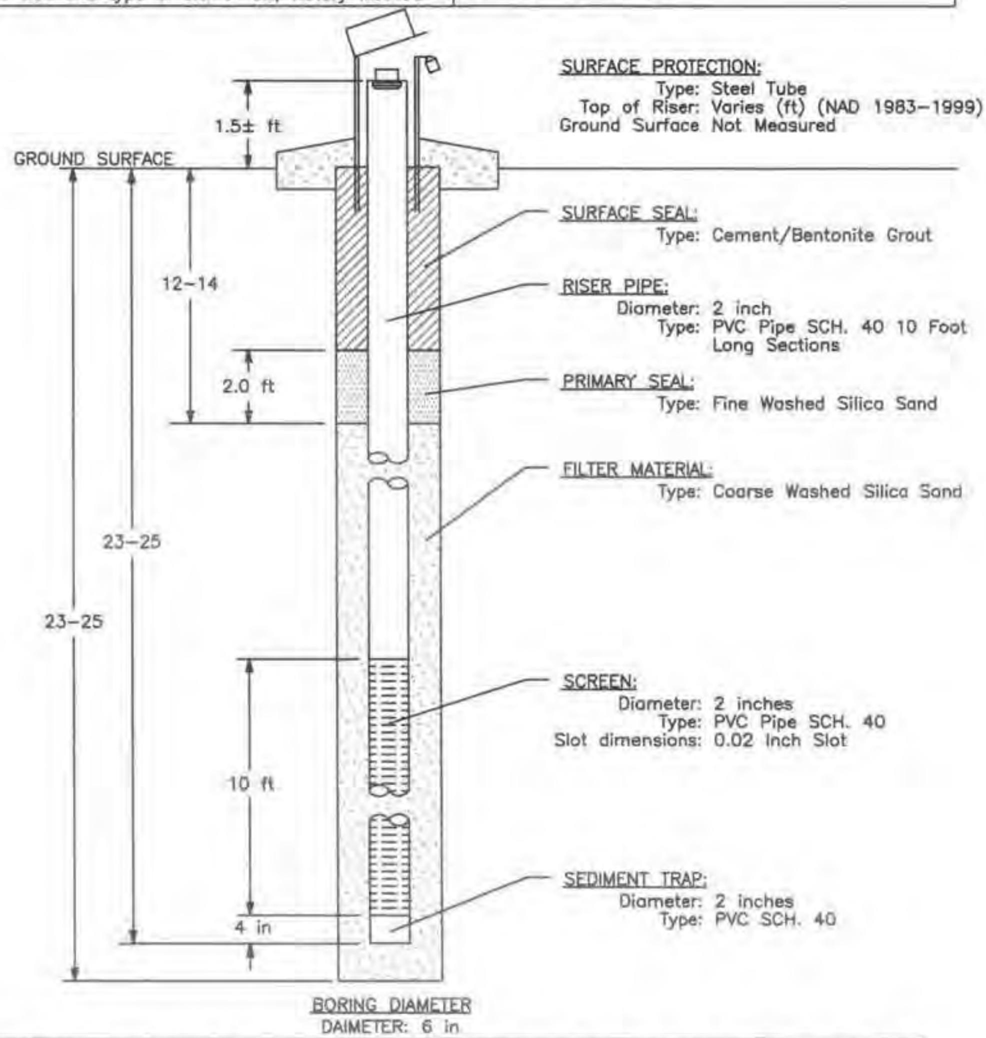


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0240

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774071, E 762223		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0240		11. Date Hole: Started 3-16-05 Completed 3-16-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 8.11
6. Depth of Piezometer: 25 ft		13. Inspector: Norm Holst
7. Size and type of bit: 6" bit, Rotary Method		



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

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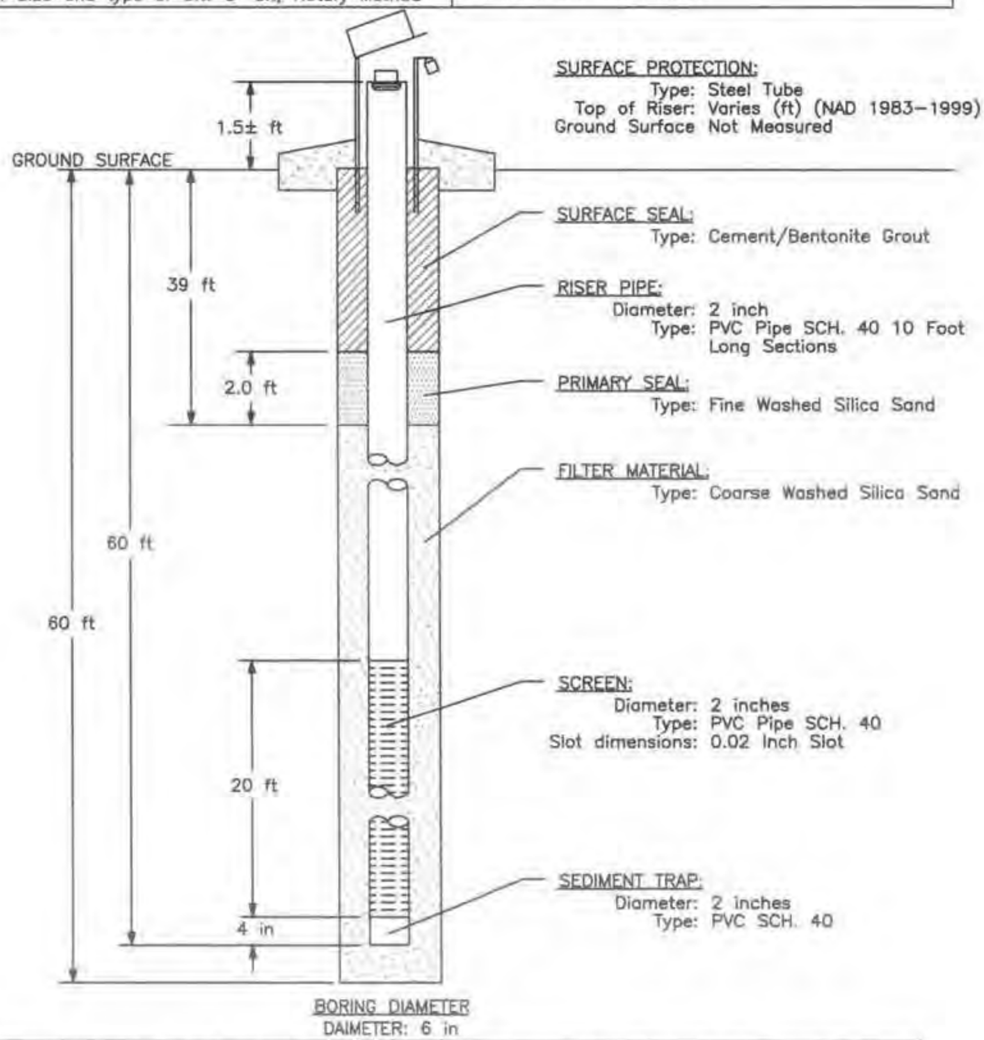
APPENDIX 1
TEST CELL BORINGS AND PIEZOMETER INSTALLATION LOGS: 241-254

Hole No, CP05-EAARS-TW-0241

PIEZOMETER LOG — Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N, E	9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0	11. Date Hole: Started 3-16-05 Completed 3-16-05
5. Name of Driller: Nodarse & Associates, Inc.	
6. Depth of Piezometer: 60 ft	12. Elevation Top of Riser: 8.11
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst

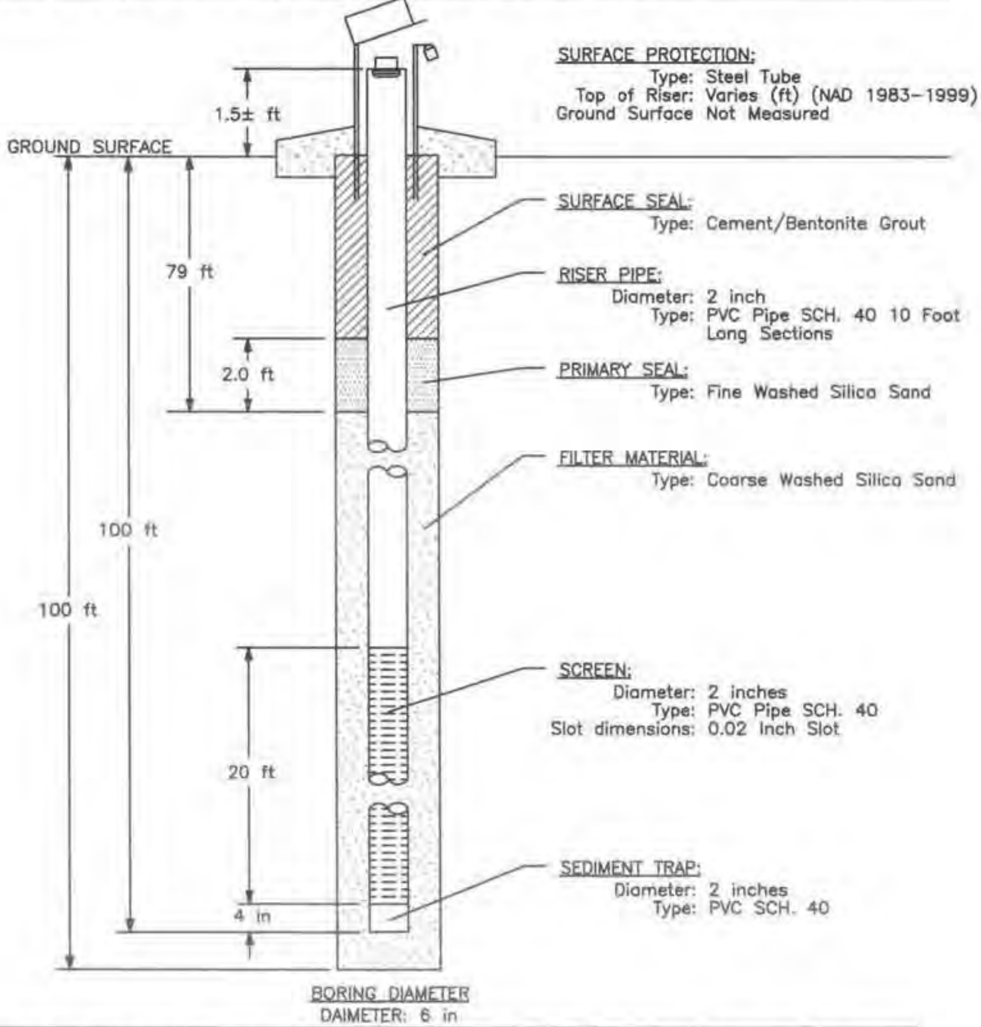


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0242

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774091, E 762223		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0242		11. Date Hole: Started 3–16–05 Completed 3–16–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 7.99
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

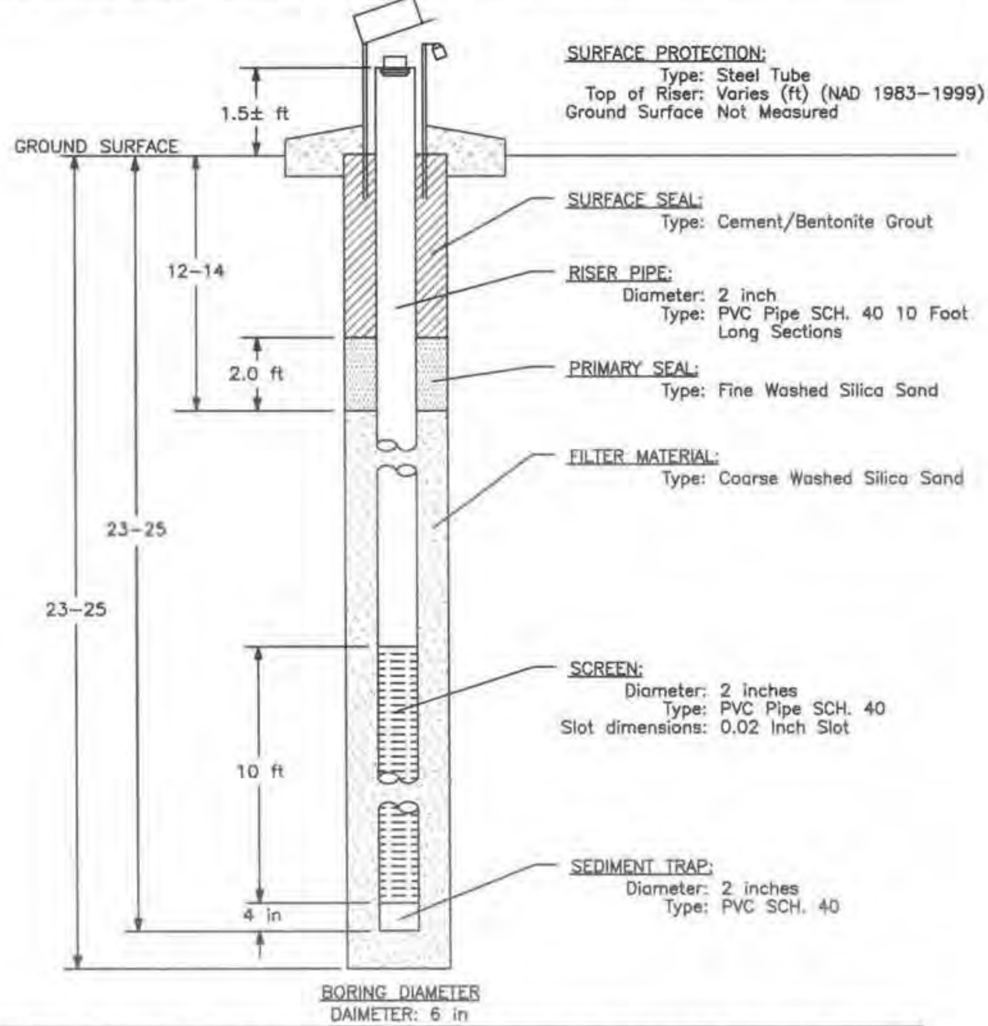


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0243

PIEZOMETER LOG / Division:	Installation:
1. Project EAA Reservoir A–1	8. Datum of Elevation Shown: NAD83
2. Location N 773743, E 761776	9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0243	11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.	
6. Depth of Piezometer: 25 ft	12. Elevation Top of Riser: 8.91
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

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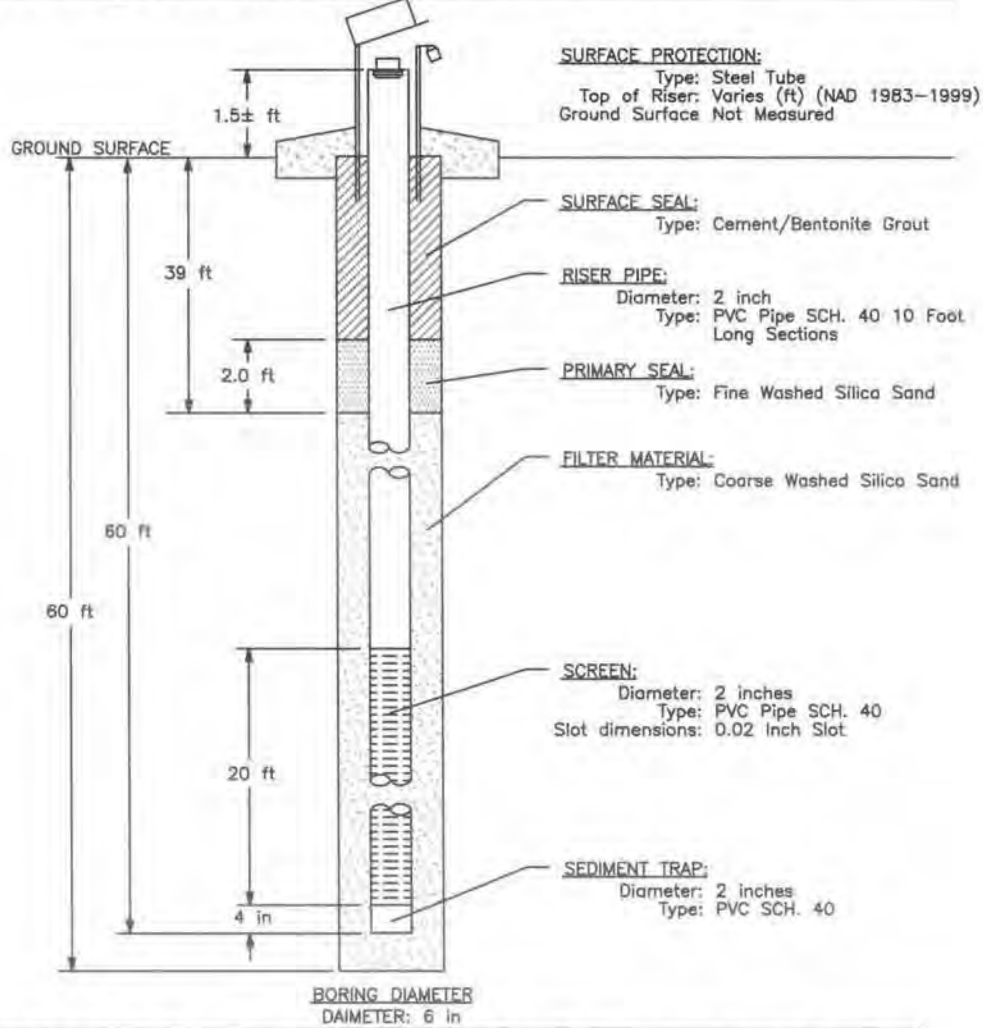
Hole No. CP05-EAARS-TW-0244

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 773743, E 761786		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0244		11. Date Hole: Started 3-25-05 Completed 3-25-05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 60 ft		12. Elevation Top of Riser: 9.12
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

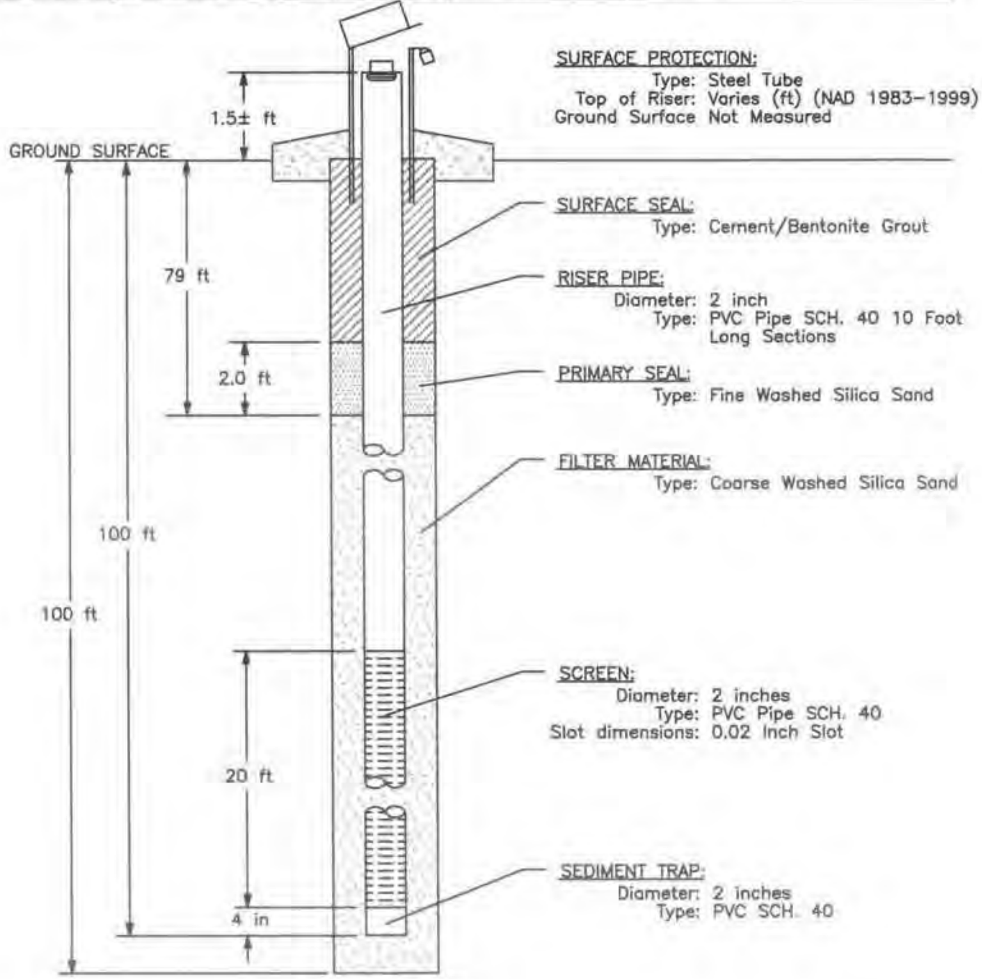


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0245

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 773743, E 761796		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0245		11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 8.63
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst



BORING DIAMETER
DAIMETER: 6 in

INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

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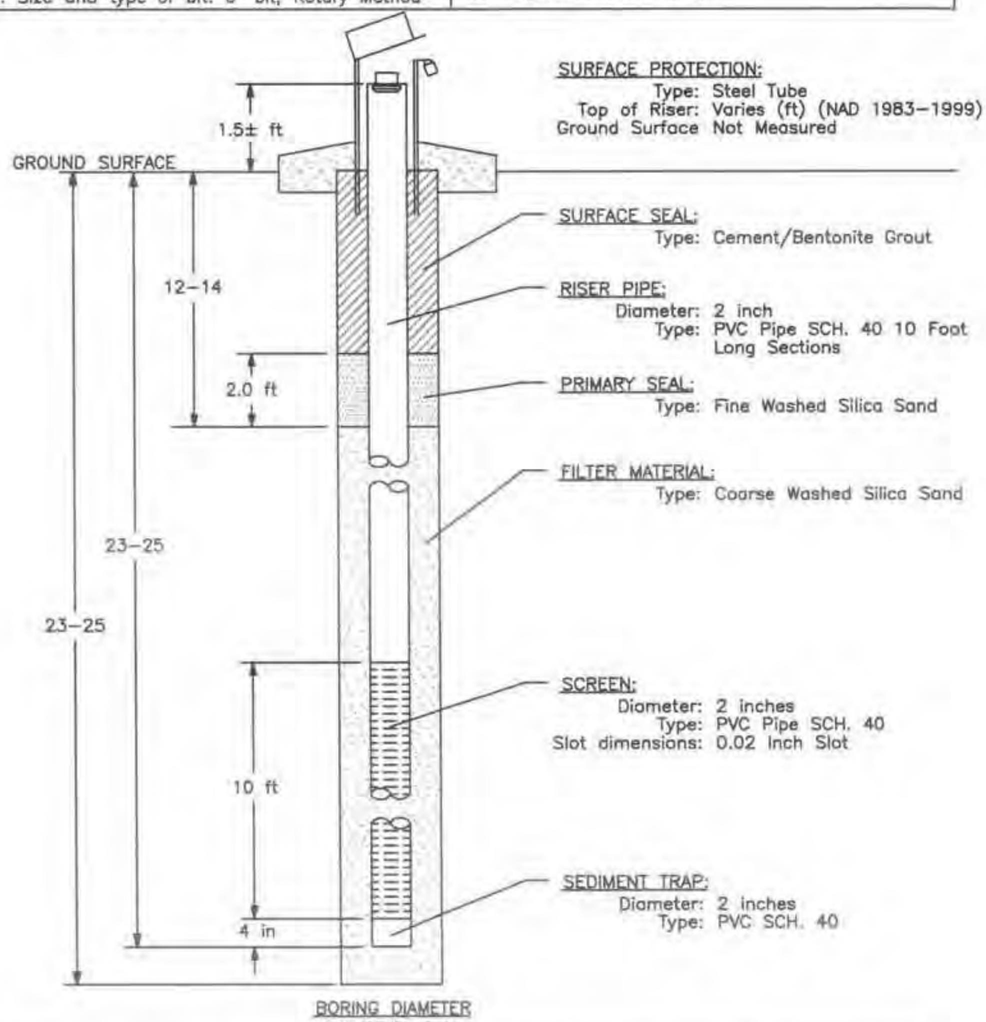
Hole No. CP05-EAARS-TW-0246

PIEZOMETER LOG / Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N 773643, E 761776	9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0246	11. Date Hole: Started 3-24-05 Completed 3-24-05
5. Name of Driller: Nodarse & Associates, Inc.	12. Elevation Top of Riser: 9.19
6. Depth of Piezometer: 25 ft	
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst

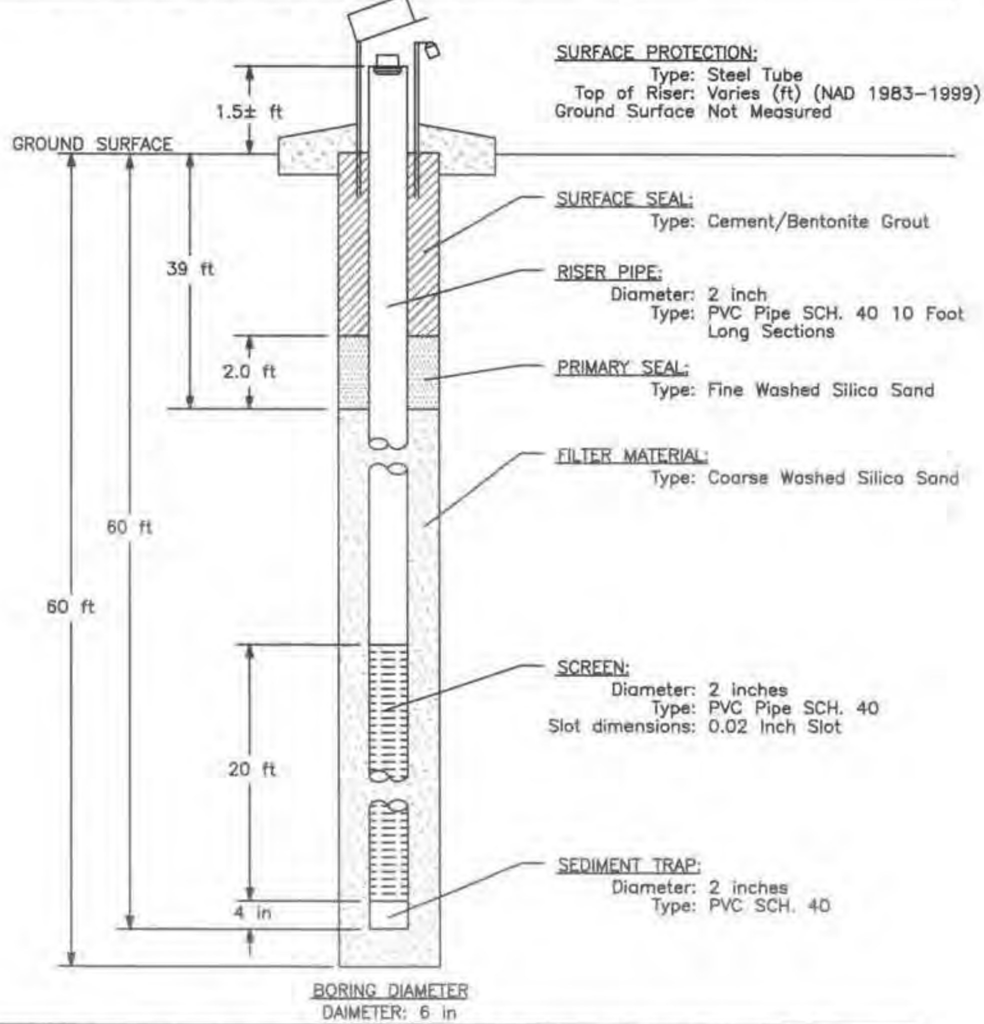


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0247

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 773643, E 761786		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0247		11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 60 ft		12. Elevation Top of Riser: 9.02
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

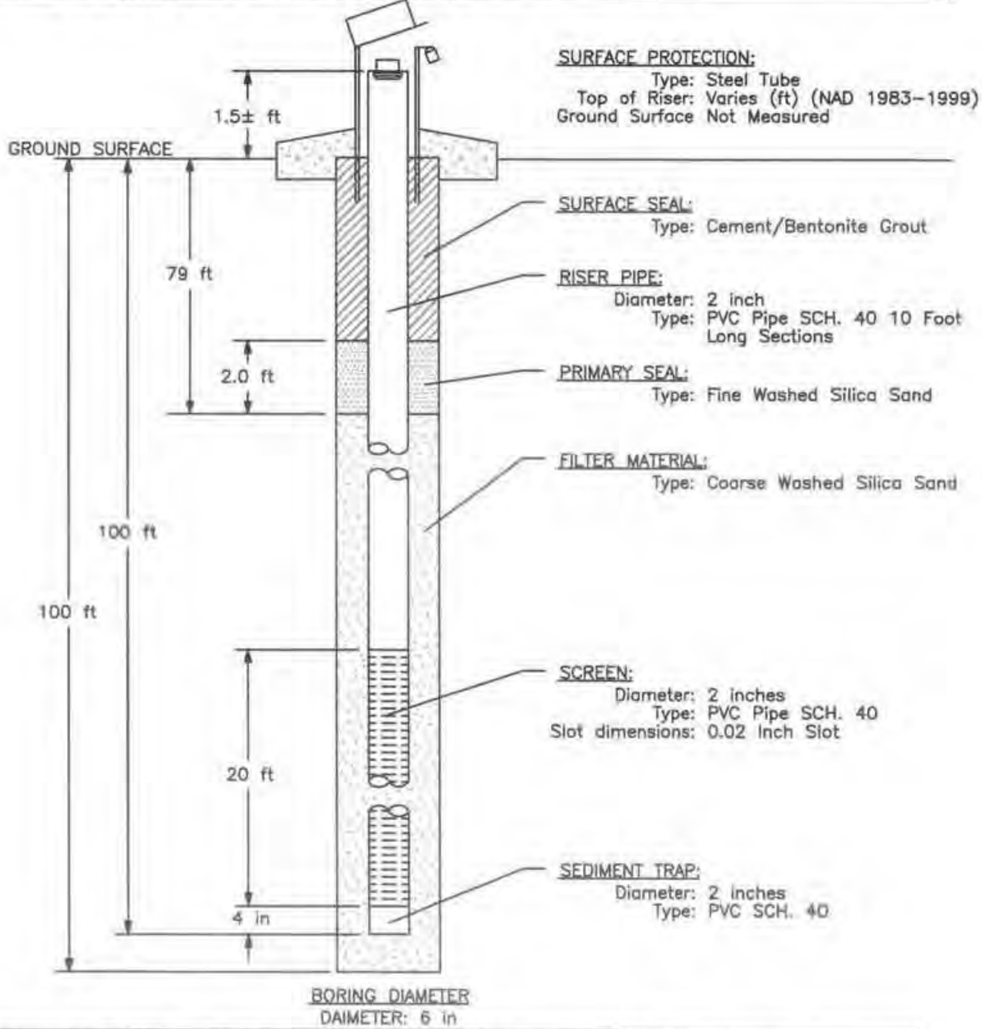


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0248

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 773643, E 761786		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0248		11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 8.63
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

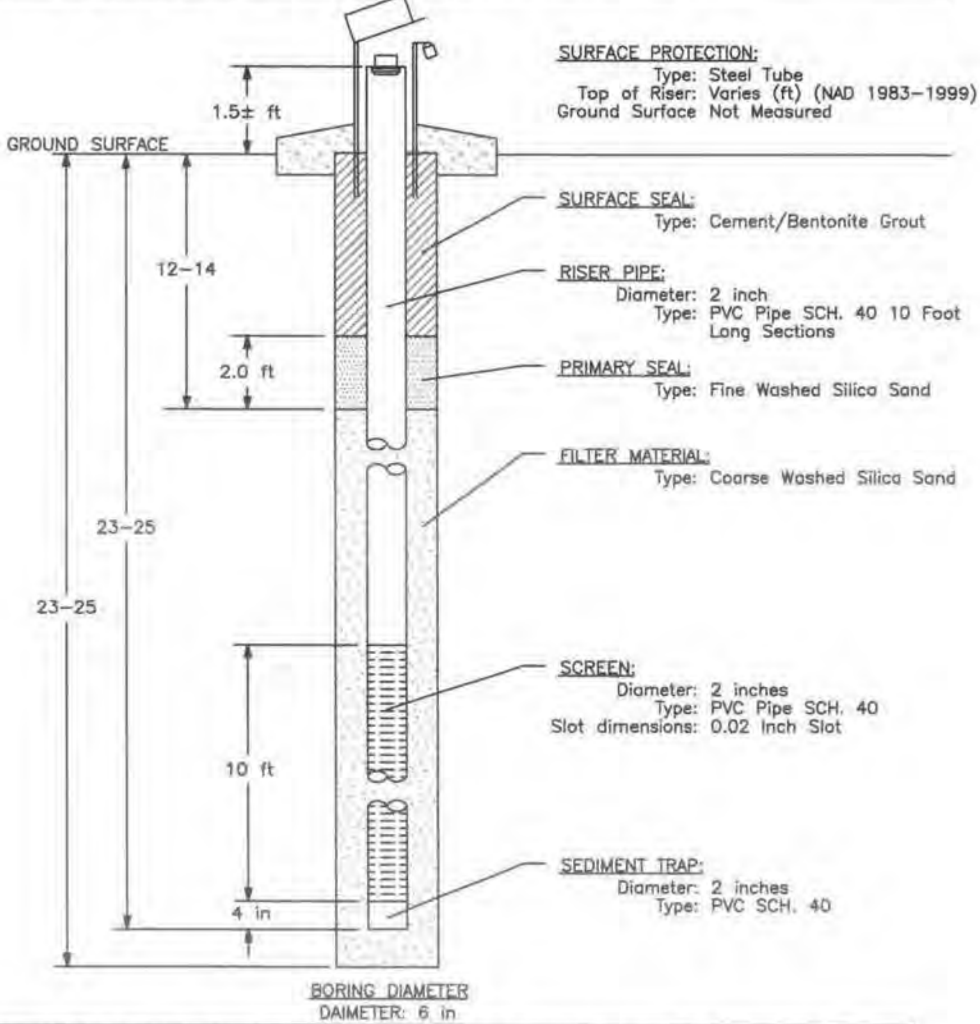


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No, CP05–EAARS–TW–0249

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774067, E 774825		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0249		11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 25 ft		12. Elevation Top of Riser: 9.81
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

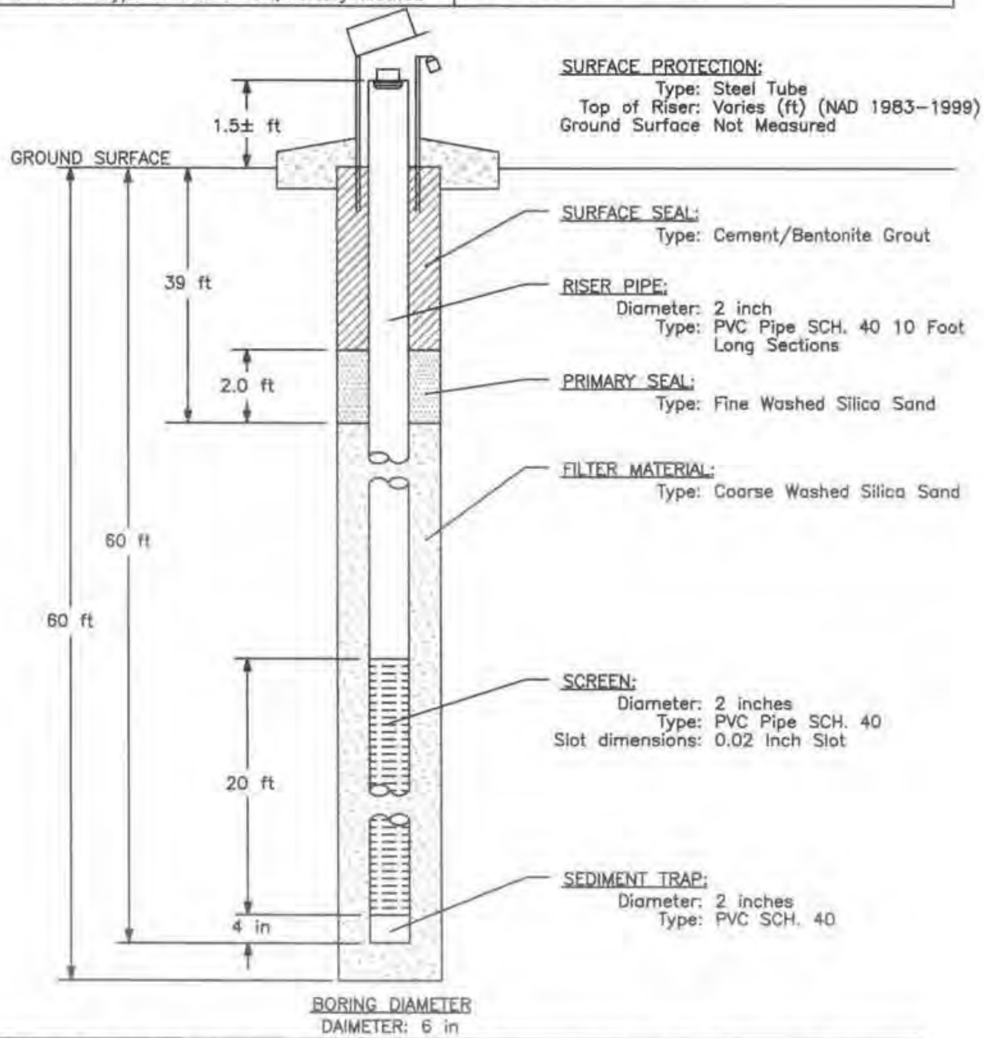


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0250

PIEZOMETER LOG / Division:	Installation:
1. Project EAA Reservoir A-1	8. Datum of Elevation Shown: NAD83
2. Location N 774077, E 774825	9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.	10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0250	11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.	
6. Depth of Piezometer: 60 ft	12. Elevation Top of Riser: 9.60
7. Size and type of bit: 6" bit, Rotary Method	13. Inspector: Norm Holst



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

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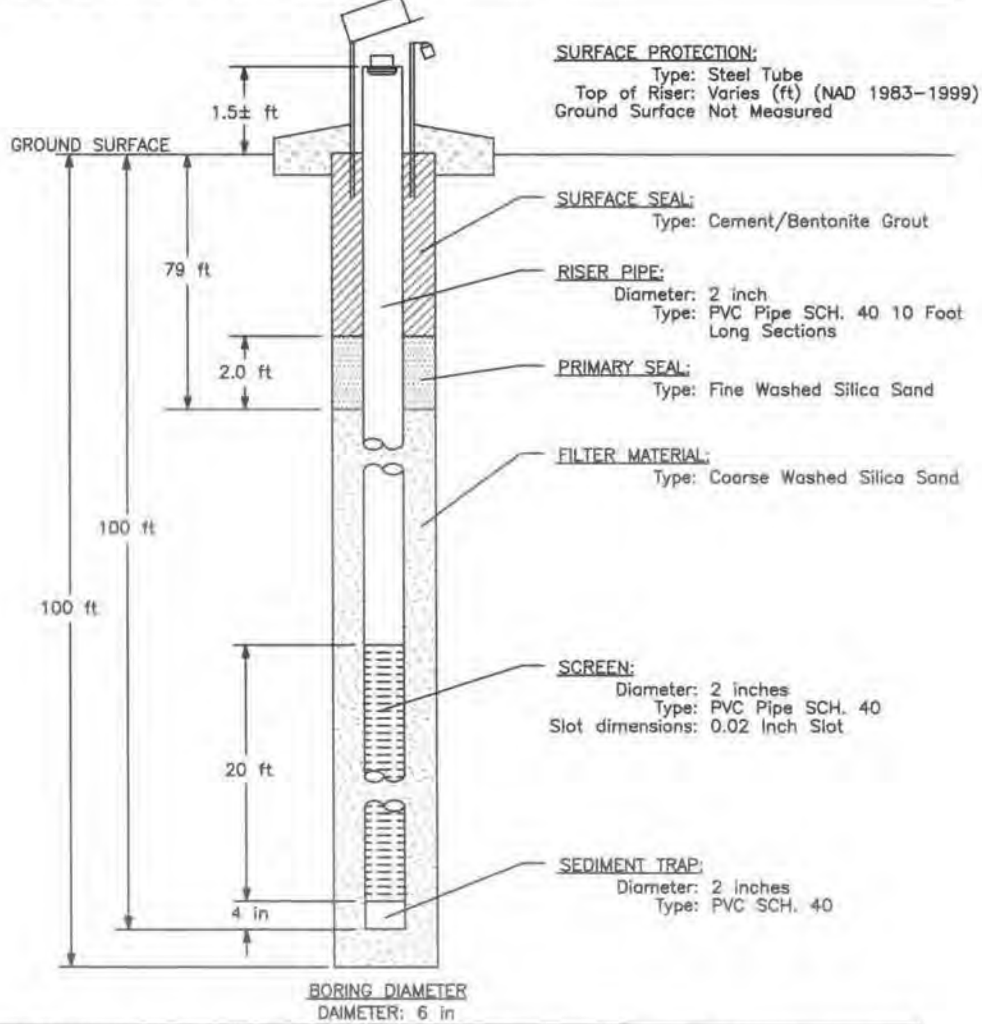
Hole No. CP05–EAARS–TW–0251

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774087, E 774825		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0251		11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 9.59
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

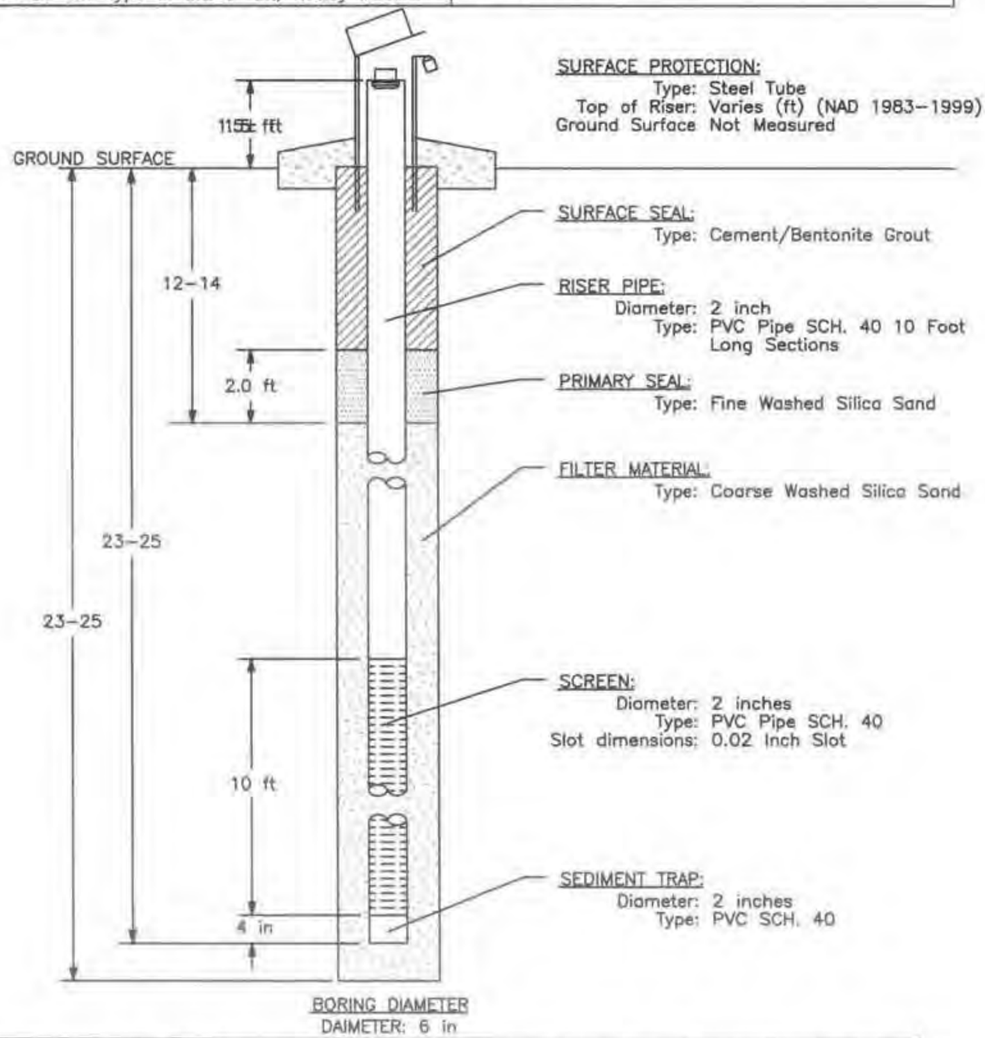


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0252

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774067, E 774725		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0252		11. Date Hole: Started 3-25-05 Completed 3-25-05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 25 ft		12. Elevation Top of Riser: 9.35
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

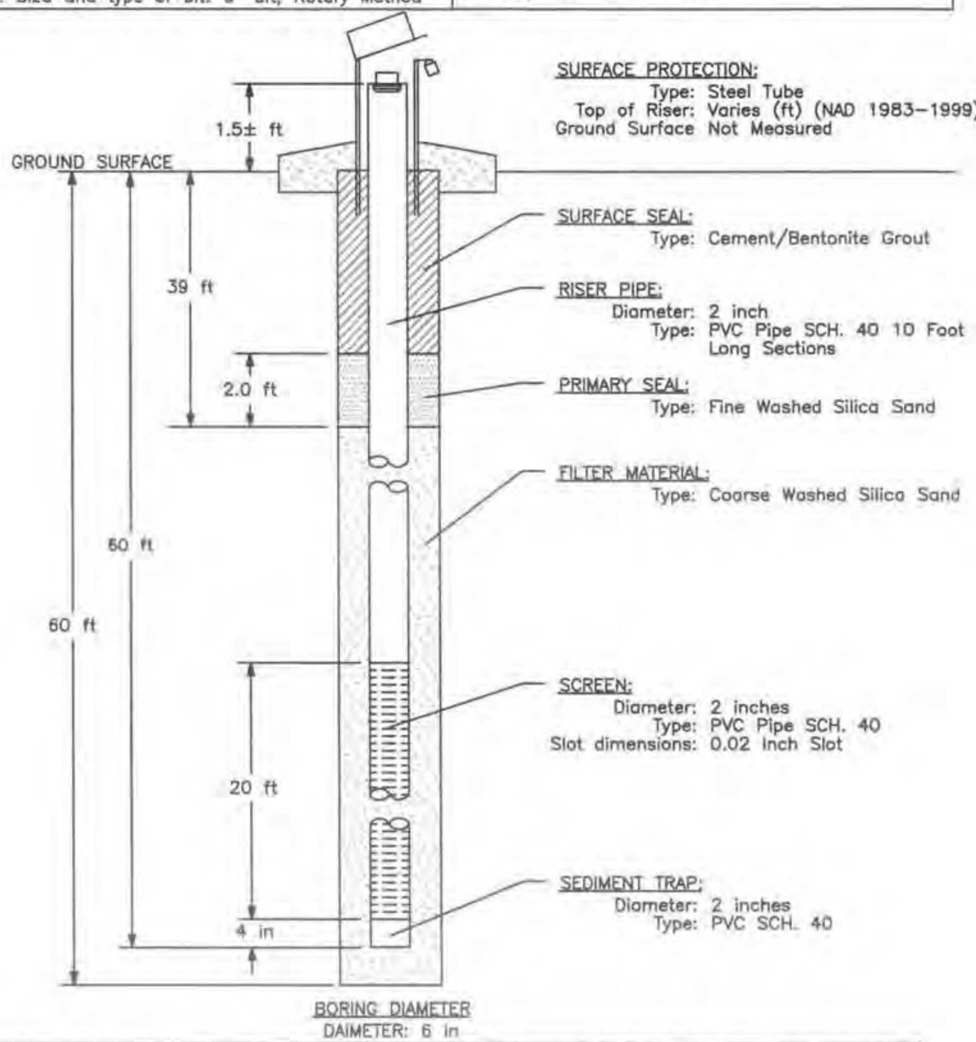


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 25 foot Piezometer Installation

Hole No. CP05-EAARS-TW-0253

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A-1		8. Datum of Elevation Shown: NAD83
2. Location N 774077, E 774725		9. Manufacture's Designation for Drill: Diedrich D-50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05-EAARS-TW-0253		11. Date Hole: Started 3-25-05 Completed 3-25-05
5. Name of Driller: Nodarse & Associates, Inc.		12. Elevation Top of Riser: 9.20
6. Depth of Piezometer: 60 ft		
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst

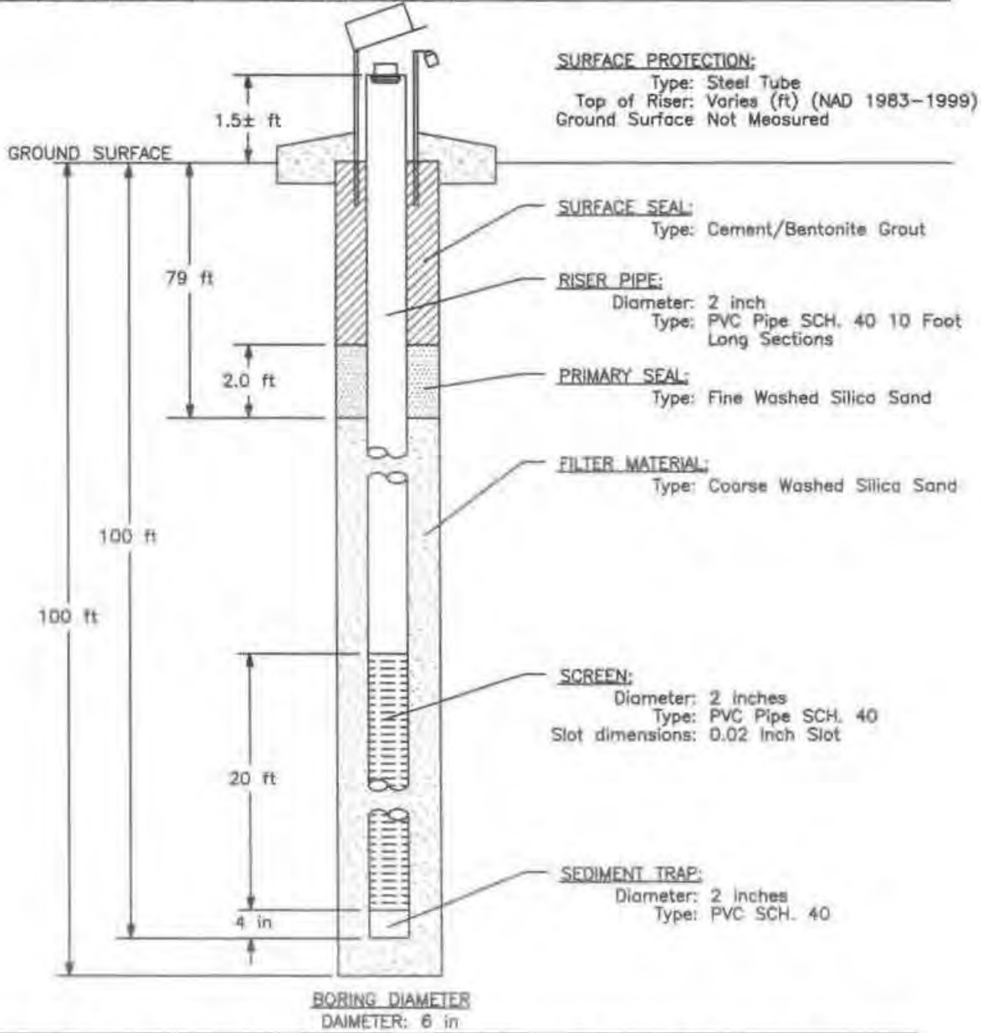


INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 60 foot Piezometer Installation

Hole No. CP05–EAARS–TW–0254

PIEZOMETER LOG	Division:	Installation:
1. Project EAA Reservoir A–1		8. Datum of Elevation Shown: NAD83
2. Location N 774087, E 774725		9. Manufacture's Designation for Drill: Diedrich D–50
3. Drilling Agency: Nodarse & Associates, Inc.		10. Elevation Groundwater:
4. Hole No. CP05–EAARS–TW–0254		11. Date Hole: Started 3–25–05 Completed 3–25–05
5. Name of Driller: Nodarse & Associates, Inc.		
6. Depth of Piezometer: 100 ft		12. Elevation Top of Riser: 9.45
7. Size and type of bit: 6" bit, Rotary Method		13. Inspector: Norm Holst



INSTALLATION METHOD: The boring was advanced to the required depth. The piezometer screen and riser were lowered to the bottom of the hole, and the sand pack was tremied into the hole to about 1 foot above the top of the screen. About 2 feet of fine sand was tremied on top, and cement/bentonite grout was tremied in to fill the rest of the hole. The riser was cut off about 1.5± feet above the ground surface, and the protective casing suspended over the riser into the ground until it set.

NOTES: Typical 100 foot Piezometer Installation

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Hole No. CP05-EAARS-CB-0255

DRILLING LOG — Division:	Installation: Sheet 1 of 8 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit; Rotary Method
2. Location: N781906.1, E758378.8 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0255	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Travis Williams	14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole Started 6/30/2005, Completed 6/30/2005
7. Thickness of Burden: N/A	17. Elevation Top of Hole: 8.7 (ft)
8. Thickness of cap rock: N/A	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: N. Holst and A.M. Noronha

ELEV (ft)	DEPTH (ft)	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
8.7	0.0	PEAT			8.7	7
7.7	1.0			1	7.7 SPT. At least part of the calcitic material noted below is shell fragments	50
		LIMESTONE: tan to light brown, mostly fine grained with some shells, thinly bedded, hard, strong, vuggy	22 (RQD 16%)	1	HQ coring	
2.7	6.0	SAND: very pale brown, wet, medium dense, well graded, fine to medium grained, angular, calcitic, trace silt			2.7	
				2	2.2 SPT	2, 7, 11
-0.3	9.0	Silty SAND: white, wet, loose, well graded, fine to coarse grained, angular, calcitic		3	-0.3 SPT. SM: Silty sand with gravel; Moisture=33%	5, 4, 3
		Silty SAND: as above but medium dense		4	-4.8 SPT. SM: Silty sand with gravel; Moisture=27%	4, 7, 6

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0255

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Hole No. CP05-EAARS-CB-0255

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.7 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-6.3	15.0					-6.3	
-9.8	18.5		SAND: very pale brownish grey, wet, dense, well graded, fine to coarse grained, angular, calcitic, some silt, trace fine gravel		5	-9.8 SPT; SW-SM; Well graded sand with silt and gravel; Moisture=19%	17 23 10
			SAND: as above but medium dense		6	-14.8 SPT	9 13 10
-18.3	27.0		Only one limestone chip recovered, hard, grey, shelly		7	-19.8 SPT; Hard drilling from 27 to 30 feet; spoon bouncing	50/1"

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0255

Hole No. CP05-EAARS-CB-0255

DRILLING LOG (Cont Sheet) | Elevation Top of Hole 8.7 | Sheet 3 of 0 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-24.7	33.4					-24.7	
-24.8	33.5		SAND: pale brownish grey, wet, medium dense, mostly fine grained, subrounded quartz sand with some fine-coarse grained calcitic sand and some fine gravel		8	-24.8 SPT; Hard drilling from 30.5 to 33.5 feet; Caloosahatchee Formation	7 8 9
			SAND: light brownish grey, wet, medium dense, mostly fine quartz sand, traces of calcitic sand, very gravelly sand		9	-29.8 SPT	5 7 4
-34.8	43.5		Gravelly SAND: greenish grey, wet, medium dense, mostly fine subangular sand, traces of calcitic sand		10	-34.8 SPT	4 10 6
			Same as above except more coarse and large particle size gravel		11	-39.8 SPT	9 12 6

34 36 38 40 42 44 46 48 50

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0255

271

Hole No. CP05-EAARS-CB-0255

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.7 | Sheet 4 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-43.1	51.8					-43.1	
			2 Chips of stone recovered, hard, dark grey		12	-44.8 SPT; Soil caving in a; Slightly hard drilling; Temporary casing from 0 to 55 feet	2 3 12
			Gravelly SAND: light brownish grey, wet, dense, fine quartz, calcitic sand particles, more coarse		13	-49.8 SPT	21 25 19
-54.8	63.5		Chips of limestone - hard, dark grey, shelly and shell fragments recovered		14	-54.8 SPT; Spoon bouncing; Soil caving in; Temporary casing from 55 to 70 feet	14 50/0"
-56.3	65.0		SAND: greenish grey, wet, very dense, a few big chips of limestone, calcitic sand particles are larger and angular		15	-59.8 SPT	21 33 19

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0255

Hole No. CP05-EAARS-CB-0255

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 8.7 Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-61.5	70.2					-61.5	
-64.8	73.5		Gravelly SAND: grey, wet, dense, fine angular quartz		16	-64.8 SPT	32 25 20
			Same as above except a couple of limestone chips recovered		17	-69.8 SPT	13 20 21
			SAND: greenish grey, wet, dense, clearly visible semi rounded quartz, trace phosphate		18	-74.8 SPT	8 15 20
						-79.8	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0255

Hole No. CP05-EAARS-CB-0255

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 8.7 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-79.9	88.6		Grades medium dense		19	-79.9 SPT	9, 12, 12
			SAND: greenish grey, wet, medium dense, mostly quartz sand, semiangular		20	-84.8 SPT	11, 12, 15
-89.8	98.5		Gravelly SAND: greenish grey, wet, medium dense, semi angular quartz sand		21	-89.8 SPT	11, 11, 9
-91.3	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0255

Hole No. CP05-EAARS-CB-0256

DRILLING LOG Division:	Installation: Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N781911.1, E761965 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0256	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Travis Williams	14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole Started 6/28/2005 Completed 6/29/2005
7. Thickness of Burden: N/A	17. Elevation Top of Hole: 8.5 (ft)
8. Thickness of cap rock: N/A	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: P. Petrey and A.M. Noronha

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
8.5	0.0						
8.0	0.5		Peat layer			8.5	2
			Hard LIMESTONE		1	7.5 SPT	24
						7.5	50
				61 (RQD 35%)	1	SPT HQ coring; UCS=2600psi	
3.0	5.5					3.0	50
					3	SPT 1.5	
					4	SPT 0.0	4 6 6
			Soft LIMESTONE (wet)		5	SPT -1.5	4 3 5
					6	SPT -3.0	3 4 3
					7	SPT -4.5	6 9 11
			Medium LIMESTONE with shells		8	SPT -6.0	50
-6.0	14.5		Shell / LIMESTONE fragments				18

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0256

Hole No. CP05-EAARS-CB-0256

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.5 | Sheet 2 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-6.5	15.0					-6.5	
			Grey fine SAND with silt / shell		9	-7.5 SPT; GP-GM; Poorly graded gravel with silt+sand; Moisture=26%	11, 8, 4
					10	SPT -9.0	5, 4
			Grey fine SAND with cemented sand and silt		11	SPT -10.5	22, 50
			Grey fine SAND with large shell fragments		12	SPT -12.0	33, 32, 28
			Grey coarse SAND with cemented sand, shell		13	-13.0 SPT: cemented sand	9, 9
			Grey fine SAND with fine shell fragments		14	-13.5 SM; Silty sand with gravel; Moisture=21% SPT -15.0	11, 27, 20, 31
-16.5	25.0		Brown grey SAND with cemented sand		15	SPT; SM; Silty sand with gravel; Moisture=29% -16.5	17, 21, 10
-18.0	26.5		Grey fine SAND, silt, shell		16	SPT -18.0	5, 7, 9
-19.5	28.0		Grey fine SAND with cemented sand with shell fragments		17	SPT -19.5	34, 15, 12
			Color change Grey / brown fine SAND, cemented sand		18	SPT -21.0	4, 50
			Grey / brown SAND, cemented sand, shell fragments		19	SPT; hard fragments -22.5	50
			shells, cemented SAND		20	SPT -24.0	50
			same shell / cement SAND fragments				23, 29

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0256

Hole No. CP05-EAARS-CB-0256

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole 8.5 | Sheet 3 of 5 Sheets

Project EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-24.9	33.4					-24.9	
						-25.5	20
			shell fragments to fine grey SAND with small shell fragmens / cemented sands		21	SPT	18
					22	SPT	27
						-27.0	46
			grey fine SAND - shell fragment and cemented sand				29
					23	SPT	40
						-28.5	33
			Large rock (cemented SAND) with shell / sand (grey, brown)				12
					24	SPT	16
						-30.0	12
			grey / brown fine sand with small shells				3
					25	SPT; SM; Silty sand with gravel; Moisture=22%	3
						-31.5	4
			grey / brown silty fine sand with cemented sand				3
					26	SPT	6
-33.0	41.5					-33.0	5
			dark brown slightly sandy CLAY				2
					27	SPT	3
						-34.5	4
			same				3
					28	SPT	3
						-36.0	2
			dark brown slightly CLAY, trace sand				4
					29	SPT; SP-SM; Poorly graded sand with silt; Moisture=31%	4
-37.5	46.0					-37.5	5
			dark brown silty fine SAND with shell				10
					30	SPT	29
-39.0	47.5					-39.0	31
			greyish brown fine SAND with shell				11
					31	SPT	10
							12
			SAND: greenish grey, wet, fine to coarse angular calcetic sand, with some fine grained rounded quartz, trace silt				
						-42.0	
							10
					32	SPT	15

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0256

Hole No. CP05-EAARS-CB-0256

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.5 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-43.3	51.8					-43.3	
			SAND: grey, wet dense, semiangular		33	-43.5 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=19% -45.0	13 16 18 18
			missed a sample		34	SPT -46.5	
					35	SPT; SP-SM; Poorly graded sand with silt; Moisture=23% -47.8	13 18 13
			SAND: greenish grey, wet, dense, trace gravel and silt		36	SPT -49.5	12 22 27
			SAND: more fine gravel and bigger shells		37	SPT -51.0	22 14 11
			very dense, carbonate sand particles, getting bigger		38	SPT: very hard drilling from 60 to 62.5 feet -52.5	10 50
			very dense		39	SPT -54.0	50
			very dense, grey, wet, mostly calcitic		40	SPT -55.5	8 21 32
			SAND: grey, wet, medium dense, semi angular carbonate sand		41	SPT -57.0	18 16 11
					42	SPT; SW-SM; Well graded sand with silt+gravel; Moisture=21% -58.5	19 18 16
			SAND: grey, wet, very dense, more quartz sand		43	SPT: hard drilling -60.0	8 42 44
			semi angular quartz sand		44	SPT -61.5	6 19 10

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0256

Hole No. CP05-EAARS-CB-0256

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.5 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-61.7	70.2		darker shade of grey, semiangular carbonate and quartz sand		45	-61.7 -63.0 SPT; SP-SM; Poorly graded sand with silt; Moisture=28%	5 5 4
			Loose sand		46	SPT -64.5	3 4 6
	72		medium dense, semi round quartz and carbonte sand, traces of phosphate		47	SPT -66.0	4 16 13
	74		semi round quartz and carbonate sand		48	SPT -67.5	13 21 17
	76		SAND: pale greenish grey, wet, medium dense, semiangular carbonate sand		49	-69.0 SPT; SP-SM; Poorly graded sand with silt+gravel; Moisture=28%	9 14 10
	78				50	SPT -70.5	6 12 12
			bigger quartz sand crystalls, semi rounded		51	SPT -72.0	9 16 15
	80		Dense SAND, traces of phosphate		52	-73.5 SPT; SP-SM; Poorly graded sand with silt; Moisture=20%	15 20 17
	82		Dense, wet, semi round quartz and carbonate sand		53	SPT -75.0	15 18 20
	84				54	SPT -76.5	12 16 16
			SAND: wet, medium dense, carbonate sand particle size is bigger		55	-78.0 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=26%	11 13 15
	86				56	SPT -79.5	13 17 18
	88		medium dense, light brown angular carbonate SAND			(continued)	8

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0256

Hole No. CP05-EAARS-CB-0256

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.5 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-80.1	88.6					-80.1	
					57	-81.0 SPT	9, 12
			SAND: greenish grey, wet, medium dense, angular calcitic sand, trace, phosphate		58	-82.5 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=22%	9, 11, 11
					59	-84.0 SPT; SM; Silty sand with gravel; Moisture=21%	11, 8, 10
					60	-85.5 SPT	9, 9, 8
			pale grey, more silt content		61	-87.0 SPT	14, 15, 13
			dense		62	-88.5 SPT; SM; Silty sand with gravel; Moisture=19%	12, 17, 16
-88.5	97.0		medium dense, fine grained silt		63	-90.0 SPT	10, 15, 12
-90.0	98.5		SAND: grey, wet, medium dense, a lot of fine particles		64	SPT; SM; Silty sand with gravel; Moisture=22%	8, 8, 13
-91.5	100.0						
			End of Boring at 100'				

NOTES:
1. Soils are field visually classified in accordance with the ASTM Designation D 2488-93
2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0256

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Hole No. CP05-EAARS-CB-0257

DRILLING LOG Division	Installation Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N783712.2, E767710.3 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0257	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Robert DeAngelis	14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole: Started 7/14/2005, Completed 7/18/2005
7. Thickness of Burden: N/A	17. Elevation Top of Hole: 10.4 (ft)
8. Thickness of cap rock: N/A	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: J. Petrie

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.4	0.0						
10.2	0.2		Asphalt with sub base beneath, comprising sandy GRAVEL, light grey to creamy white, very dense, fine gravel occasional, dry, subangular			9.9	
			Gravelly SAND, light grey, dense, well graded, fine to coarse, subangular, dry, trace of shell frequently		1	SPT	15 / 31 / 26
8.4	2.0		SAND: light grey and black, medium dense, fine to medium, well graded, some subangular to subrounded fine gravel, dry, calcareous, trace medium quartz sand		2	8.4 SPT	11 / 19 / 17
6.4	4.0		GRAVEL: light creamy grey, hard, angular, flakes of limestone			6.4	9
5.7	4.8				3	5.7 SPT	50/3"
			Light creamy grey, medium bedded, moderately strong to strong, fine grained occasionally shelly LIMESTONE with some voids. Yellowish greenish grey, thinly bedded, moderately strong, fine grained, shelly LIMESTONE and SILTSTONE interbedded, shells included, silty partings. Light grey moderately strong becoming weak at depth, medium bedded, fine grained, shelly LIMESTONE with vugs/voids, silty partings	76 (RQD 48%)	1	HQ coring, UCS=1250psi	
						0.7	
			Light creamy grey, medium bedded, moderately strong to strong, fine grained, occasionally shelly LIMESTONE, bottom 0.5 ft with some voids/vugs and becoming weaker	100 (RQD 92%)	2	HQ coring	
-1.4	11.8		Silty SAND, light grey, loose, well graded, fine to coarse, subangular, wet			-1.4	
						-3.6	
					4	SPT	3 / 3

continued

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0257

Hole No. CP05-EAARS-CB-0257

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.4 | Sheet 2 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.6	15.0					-4.6	2
-8.6	19.0		Cemented SILT, light grey, hard, fine grained, wet			-8.6	5
-9.4	19.8				5	SPT	50/3"
			SAND: light grey and light brown, medium dense, fine to coarse, well graded, subangular		6	-13.6 SPT	9, 9, 10
			SAND: light grey, medium dense, fine to coarse, well graded, subangular, silty with 3" beds of gravel, dark grey, medium dense, fine some coarse subangular, sandy		7	-18.6 SPT	12, 11, 6

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0257

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Hole No. CP05-EAARS-CB-0257

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.0	33.4					-23.0	
			SAND: light brown, dense, well graded, fine to coarse, subangular, wet		8	-23.6 SPT; 36 to 40 feet-cemeted horizon	19 15 42
			No recovery		9	-28.6 SPT	50
			SAND: light grey green, medium dense, well graded, fine to coarse, wet, shells, some intact		10	-33.6 SPT	4 5 7
-38.6	49.0		GRAVEL: grey, medium dense, well graded, fine and coarse, wet, cemented fine to coarse sand with shell fragments, quartz, subrounded		11	-38.6 SPT	2 5 8

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0257

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Hole No. CP05-EAARS-CB-0257

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.4 Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/0.5'
-41.4	51.8					-41.4	
-43.6	54.0		Gravelly SAND: grey, loose, well graded, fine to coarse, wet, cemented, fine to coarse sand gravel sized with shell fragments, mainly medium sand sized, quartz, subrounded, fine to medium sand		12	-43.6 SPT	3 4 5
-48.6	59.0		SAND: greenish grey, medium dense, well graded, fine to coarse, wet, fine cemented sand gravel, some shell fragments, mailny medium sand sized		13	-48.6 SPT	8 9 8
			SAND: olive grey green, medium dense, well graded, fine to coarse, wet, coarse sand, shell fragments, black mineral and quartz, subrounded, fine to medium size		14	-53.6 SPT	8 11 9
			Shelly SAND: greenish grey, medium dense, well graded, fine to coarse with angular shell fragments, some fine to		15	-58.6 SPT	4 5

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0257

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Hole No. CP05-EAARS-CB-0257

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.8	70.2		medium black mineral and quartz subrounded			-59.8	9
-63.6	74.0		Sandy GRAVEL: creamy light grey, very dense, well graded fine occasional coarse, angular to subangular cemented sand (fine to coarse), shell fragments included "Gravelly drilling"		16	-63.6 SPT; "Gravelly drilling"	3 23 45
			As above, except grey, dense		17	-68.6 SPT	10 20 26
-73.6	84.0		SAND: light grey, loose, well graded, fine to medium occasional coarse, wet, shelly fragments		18	-73.6 SPT	6 3 4

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0257

Hole No. CP05-EAARS-CB-0257

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10.4 Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.2	88.6					-78.2	
						-78.6	
			SAND: light grey, medium dense, well graded, fine to coarse, wet, quartz, black mineral medium sand size		19	SPT	13 15 16
						-83.6	
			SAND: some gravel, grey, medium dense, well graded, fine to coarse, subangular to subrounded, cemented sand, angular to subangular, wet, quartz subrounded medium sand		20	SPT	8 8 6
						-88.6	
-90.1	100.5		SAND: some gravel, light grey, medium dense, well graded, fine to coarse, subangular to angular, pieces cemented sand, shell flakes, wet, quartz subrounded medium sand		21	SPT	9 7 7
			End of Boring at 100.5'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0257

286

Hole No. CP05-EAARS-CB-0258

DRILLING LOG	Division:	Installation:	Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N780135.8, E770597.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0258		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Erik Bluemke		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: N/A		16. Date Hole Started 8/5/2005 Completed 8/9/2005	
8. Thickness of cap rock: N/A		17. Elevation Top of Hole: 10.4 (ft)	
9. Depth of hole: 100 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: N. Holst	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.4	0.0		PEAT: brownish black, moist, loose, fine grained, non-plastic, organic, roots		1	10.4 SPT; All calcitic material noted below is at least in part shells. 8.9	3, 3, 3, 2
					2	SPT 7.4	2, 3, 2
5.9	4.5				3	SPT 5.9	27, 50/4"
			LIMESTONE: tan to light gray and light brown, thinly bedded, fine to coarse grained, fossiliferous, vuggy, strong and hard to soft, weak and porous	54 (RQD 22%)	1	HQ coring. Ranges from wackestone to grainstone	
1.9	8.5		Gravelly SAND: light brownish gray, very dense, wet, well graded, fine to coarse grained, angular, calcitic, some silt			0.9	
					4	SPT: Hard drilling from 10 to 11.5 feet	33, 50/3"
-3.1	13.5		SAND: light grey, medium dense, wet, moderately graded, fine to medium grained, angular, calcitic, some silt		5	-3.1 SPT	14, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0258

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Hole No. CP05-EAARS-CB-0258

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.4 Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.6	15.0					-4.6	
			SAND: greenish grey, medium dense, wet, poorly graded, fine grained, sub rounded, calcitic, trace silt		6	-8.1 SPT	40 16 14
-13.1	23.5		GRAVEL: pale brownish grey, very dense, wet, well graded, fine to coarse, angular, limestone, trace sand		7	-13.1 SPT	47 12 40
-18.1	28.5		Gravelly SAND: pale brownish grey, medium dense, well graded, fine to coarse, calcitic, angular with gravel as above, trace silt		8	-18.1 SPT	22 14 12

16 18 20 22 24 26 28 30 32

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0258

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Hole No. CP05-EAARS-CB-0258

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.0	33.4					-23.0	
-23.1	33.5		SAND: as above but very dense and less (trace) gravel; no silt		9	-23.1 SPT; Hard drilling from 35.5 to 37 feet	30 38 50/2"
-28.1	38.5		Calcareous SANDSTONE or Sandy LIMESTONE: only coarse sand to fine gravel sized angular fragments		10	-28.1 SPT; Caloosahatchee Formation	50/3"
-33.1	43.5		SAND: pale brownish gray, medium dense, wet, uniform, fine grained, subrounded, quartzose with traces, fine to medium, calcitic sand and fine gravel		11	-33.1 SPT	10 8 6
			SAND: as above but more (some) fine to coarse, angular, calcitic sand, no gravel and dense		12	-38.1 SPT	19 24 25

34 36 38 40 42 44 46 48 50

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0258

Hole No. CP05-EAARS-CB-0258

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 8 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.4	51.8					-41.4	
			SAND: pale greenish grey, wet, medium dense, uniform, fine grained, quartzose, subrounded, with trace calcitic, angular, fine to coarse sand and some gravel		13	-43.1 SPT	7 / 12 / 16
			SAND: pale brownish grey, wet, medium dense, subequal amounts of fine to coarse, angular, calcitic and fine, subangular, quartzose, trace silt		14	-48.1 SPT	11 / 13 / 11
			SAND: as above but some gravel		15	-53.1 SPT	13 / 14 / 14
			SAND: as above but dense and mostly fine to coarse, angular, and calcitic, some fine, subrounded and quartzose, some gravel		16	-58.1 SPT; Ochopee layer	11 / 15 / 20

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0258

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Hole No. CP05-EAARS-CB-0258

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.4 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.8	70.2					-59.8	
			SAND: pale brownish grey, wet, medium dense, well graded, fine to coarse, angular, calcitic with trace fine, subrounded quartz, trace silt and fine gravel		17	-63.1 SPT	11 11 10
			SAND: as above but more (some) silt, still traces quartz sand and gravel		18	-68.1 SPT	13 13 20
			SAND: light greenish grey, wet, medium dense, almost all uniform, fine grained, subrounded and quartzose, trace fine to coarse, angular, calcitic		19	-73.1 SPT	4 7 10
						-78.1	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0258

Hole No. CP05-EAARS-CB-0258

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.2	88.6		SAND: light gray, dense, wet, well graded, fine to medium, subangular to subrounded, subequal parts quartz and calcitic sand		20	-78.2 SPT	14, 16, 28
			SAND: as above but fine to coarse with a trace silt and some gravel, some coarse sand and gravel is aggregates of finer particles		21	-83.1 SPT	13, 17, 18
-89.6	100.0		SAND: as above		22	-88.1 SPT	15, 10, 18
			End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0258

Hole No. CP05-EAARS-CB-0259

DRILLING LOG	Division:	Installation:	Sheet 1 of 0 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit. Rotary Method	
2. Location: N776942.1, E772726.6 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0259		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Erik Bluemke		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: N/A		16. Date Hole Started 7/15/2005 Completed 7/18/2005	
8. Thickness of cap rock: N/A		17. Elevation Top of Hole: 10 (ft)	
9. Depth of hole: 100 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: N. Holst	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.0	0.0		Gravelly SAND: tan to light brown, dry, very dense, well graded, fine to coarse grained, angular calcitic, road fill		1	10.0 SPT 8.5	35, 37, 37
					2	SPT 7.0	43, 34, 21
7.0	3.0		LIMESTONE: caprock, tan to light brown, fine grained, fossiliferous, thinly bedded, vuggy, strong and hard to soft, weak and porous			6.5 SPT	50/6"
				56 (RQD 24%)	1	HQ coring; UCS=1430psi	
4.0	6.0		No recovery: probably sand as below				
2.0	8.0		LIMESTONE: as above, but pale yellowish grey. Longest cylindrical piece is 0.15 ft between 8 and 10 ft.			2.0 2.0 SPT	50/0"
				55 (RQD 0%)	2	HQ coring; very hard 8.0 to 8.5 feet 0.5	
0.0	10.0		SAND: pale brownish grey, wet, loose, angular, calcitic, with some silt, well graded, fine to coarse grained		5	-3.5 SPT	3, 5, 1

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0259

Hole No. CP05-EAARS-CB-0259

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 2 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-5.0	15.0					-5.0	
						-8.5	
			SAND: as above but pale greenish grey and medium dense		6	SPT	7 8 8
						-13.5	
			SAND: as above but dense with some fine gravel		7	SPT	16 16 21
						-18.5	
			SAND: as above but very dense		8	SPT	18 21 31

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0259

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Hole No. CP05-EAARS-CB-0259

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.4	33.4					-23.4	
-23.5	33.5		Gravelly SAND: as above but more gravel and very dense		9	-23.5 SPT	4, 6, 50/2"
-28.5	38.5		SAND: pale greenish grey, wet, medium dense, well graded, fine to coarse grained, mostly fine, subrounded and quartzose or angular cemented		10	-28.5 SPT; Caloosahatchee Formation	13, 8, 7
			SAND: pale brownish grey, wet, loose, subrounded, poorly graded, fine grained, trace of fine to coarse grained, angular, calcitic		11	-33.5 SPT	2, 2, 3
			SAND: as above		12	-38.5 SPT	4, 4, 6

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0259

Hole No. CP05-EAARS-CB-0259

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10 Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.8	51.8					-41.8	
			SAND: pale greenish grey, wet, dense, poorly graded, fine to coarse grained, mostly fine subrounded and quartzose, some cemented _____ and angular, calcitic		13	-43.5 SPT	9 10 24
			SAND: pale greenish grey, wet, medium dense, well graded, subequal amounts of fine subrounded quartzose and fine to coarse, angular, calcitic		14	-48.8 SPT	14 10 9
			SAND: as above but mostly fine to coarse grained, angular and calcitic, trace fine gravel, trace silt		15	-53.5 SPT	8 13 13
			SAND: pale greenish grey, wet, dense, poorly graded, mostly fine grained, subrounded, quartzose, trace fine to coarse, angular, calcitic, trace silt		16	-58.5 SPT	22 22 17

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0259

Hole No. CP05-EAARS-CB-0259

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.2	70.2					-60.2	
			SAND: as above but trace gravel			-63.5	
					17	SPT	9 / 9 / 21
			SAND: as above but subequal amounts of fine, subrounded, quartzose and fine to coarse, angular, calcitic, some fine gravel and trace silt			-68.5	
					18	SPT; Ochopee layer	15 / 11 / 10
-73.5	83.5		Only one LIMESTONE fragment			-73.5	
-74.5	84.5				19	SPT, hard from 83.5 to 84.5 feet	50/0"
						-78.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0259

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Hole No. CP05-EAARS-CB-0259

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.6	88.6		SAND: pale greenish grey, wet, medium dense, well graded, fine to coarse grained, mostly fine grained, subrounded quartzose or calcitic cemented clasts of the same		20	-78.6 SPT	12, 10, 6
			SAND: as above but trace fine gravel		21	-83.5 SPT	12, 11, 10
			SAND: as above but more (some) fine gravel		22	-88.5 SPT	7, 5, 7
-90.0	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0259

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Hole No. CP05-EAARS-CB-0260

DRILLING LOG	Division:	Installation:	Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N773583.6, E775194.5 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No. CP05-EAARS-CB-0260		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Travis Williams		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 7/28/2005 Completed 8/8/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 10.5 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: A.M. Noronha	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.5	0.0		PEAT: black, loose, poorly graded, fine grained, dry, mostly organic		1	10.5 SPT 9.0	1 3 3
			Same as above except medium dense, wet		2	SPT 7.5	3 6 7
			Same as above with some stone chips		3	SPT 5.5	2 2 14
			Same as above		4	SPT; Casing 0 to 5 feet due to rocks obstructing borehole advancement 3.5	4 10 9
2.5	8.0				5	2.5 SPT	50/4"
			A few small pieces of limestone recovered LIMESTONE: traces of shells, voids do not appear very common	48 (RQD 22%)	1	HQ coring; UCS=9768psi; Core: 7 to 12 feet, 22" of total recovery, one piece each of 4.5", 4.75", 9" and 5.75"	
-1.5	12.0					-1.5	
			SAND: light brown, very dense, medium graded, fine to coarse grained, angular, cemented, wet, with traces of shell fragments		6	SPT -3.0	29 50/6"
			SAND: light grey, dense, poorly graded, fine to medium grained, subangular, wet		7	SPT: pieces of limestone recovered	9 14 19

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0260

SAJ FORM 1836

Hole No: CP05-EAARS-CB-0260

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: 10.5					Sheet 2 of 5 Sheets
Project: EAA Reservoir A-1				Installation		
ELEV. (ft)	**DEPTH (ft)**	**LEGEND**	**CLASSIFICATION OF MATERIALS**	**CORE REC %**	**SAMPLE NUMBER**	**REMARKS**	**BLOWS/ 0.5'**
-4.5	15.0					-4.5	
			SAND: greenish grey, medium dense, moderately graded, fine to medium grained, subangular calcitic sand, wet		8	-8.0 SPT	9 2 20
			Only a few shells recovered		9	-13.0 SPT; Spoon bouncing; No recovery; Hard drilling from 24 to 24.5 feet	50/5"
			SAND: greenish grey, very dense, moderately graded, fine to medium grained, subangular, wet		10	-18.0 SPT: Spoon bouncing; lost 20% circulation	19 40 50/4"

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

SAJ FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0260

Hole No. CP05-EAARS-CB-0260

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10.5 Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-22.9	33.4					-22.9	
-23.0			SAND; greenish grey, very dense, poorly graded, fine grained, subangular calcitic sand, rounded quartz sand, wet, trace phosphate		11	SPT; Caloosahatchee Formation; one limestone chip recovered	50/5"
-28.0			SAND: greenish to light grey, dense, poorly graded, fine grained, subangular calcitic sand, rounded quartz, wet, trace phosphate		12	SPT	22, 24, 18
-33.0			SAND: greenish grey, medium dense, poorly graded, fine grained, subrounded, calcitic sand, rounded quartz		13	SPT	13, 13, 15
-38.0			Same as above except very dense		14	SPT	19, 21, 29

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0260

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Hole No. CP05-EAARS-CB-0260

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.5 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.3	51.8					-41.3	
			Same as above except dense, few gravelly pieces at sample bottom		15	-43.0 SPT	17 15 15
			Same as above except very dense. One Limestone piece recovered at sample bottom.		16	-48.0 SPT	16 32 38
			SAND: greenish grey, dense, moderately graded, fine to medium grained, subangular, calcitic sand, subrounded quartz, wet, shells present, a couple of stone chips recovered at sample top		17	-53.0 SPT	24 24 15
-58.0	68.5		Gravelly SAND: greenish grey, medium dense, poorly graded, fine to coarse grained, angular calcitic sand, sub-rounded quartz, cemented, wet		18	-58.0 SPT	10 14 11

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0260

Hole No. CP05-EAARS-CB-0260

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.5 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.7	70.2		Same as above			-59.7	
						-63.0	
					19	SPT	6
							8
							11
-68.0	78.5		SAND, greenish grey, very dense, poorly graded, fine to coarse grained, subangular calcitic sand, rounded quartz, cemented, wet, brace shells, couple stone pieces recovered			-68.0	
					20	SPT	12
							10
							50/5"
			Same as above - except medium dense			-73.0	
					21	SPT	9
							14
							12
						-78.0	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0260

Hole No. CP05-EAARS-CB-0260

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.5 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.1	88.6		SAND; greenish grey, medium dense, poorly graded, fine to medium grained, subangular calcitic, subrounded quartz, wet		22	-78.1 SPT; trace shell	17, 14, 13
			SAND; greenish grey, medium dense, moderately graded, fine to medium grained, wet, quite gravelly, few small chips of limestone		23	-83.0 SPT	7, 7, 8
					24	-88.0 SPT	10, 17, 13
-89.5	100.0		End of Boring at 100'				

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

NOTES:
1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93
2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0260

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APPENDIX 2
SUPPLEMENTAL BORINGS AND PIEZOMETER INSTALLATION LOGS: 261-280

Hole No. CP05-EAARS-CB-0261

DRILLING LOG — Division:	Installation: (Sheet 1 of 5 Sheets)
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N770311.3 E777073.7 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0261	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Travis Williams	14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
7. Thickness of Burden: N/A	16. Date Hole Started 7/18/2005 Completed 7/18/2005
8. Thickness of cap rock: N/A	17. Elevation Top of Hole: 10.1 (ft)
9. Depth of hole: 100 ft	18. Total Core Recovery for hole: N/A
	19. Inspector: J. Petrie and A.M. Noronha

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.1	0.0		ROADFILL: Sandy GRAVEL, dense, creamy grey, well graded, fine and coarse, subangular to angular, dry		1	10.1 SPT 8.6	22, 33, 12
8.6	1.5		PEAT: black, very loose, fine grained, clayey Sample jar # 3) Peat		2	SPT 7.1	1, 1, 1
6.6	3.5		3a) Gravelly SAND: greenish grey, dense, angular calcitic sand, wet		3	SPT 5.6	1, 6, 27
			Same as above - but very dense, limestone chips		4	4.6 SPT	12, 50/4"
4.6	5.5		LIMESTONE: light grey to white, very hard, shell fragments, quite porous	32 (RQD 14%)	1	HQ coring; UCS=4340psi; Core 5.5 to 10.5 feet	
-0.4	10.5		SAND: greenish grey, medium dense, moderately graded, angular calcitic sand, wet, trace gravel		5	-0.4 SPT, 2 limestone chips recovered -3.4	8, 6, 8
			SAND: light grey, medium dense, moderately graded, angular calcitic sand, wet		6	SPT. Hard drilling from 12 to 13.5 feet	12, 8, 5

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT: EAA Reservoir A-1 — HOLE NUMBER: CP05-EAARS-CB-0261

Hole No. CP05-EAARS-CB-0261

DRILLING LOG (Cont Sheet)	Elevation Top of Hole: 10.1	Sheet 2 of 8 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.9	15.0					-4.9	
			SAND: light grey, medium dense, poorly graded, subangular calcitic sand, wet, fine sand present, trace silt		7	-8.4 SPT	16 15 10
			Same as above, but greenish grey color		8	-13.4 SPT	15 10 18
			SAND: light grey, very dense, poorly graded, subrounded calcitic sand, wet, fine sand present		9	-18.4 SPT	50/5"

16 18 20 22 24 26 28 30 32

(continued)

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0261

Hole No. CP05-EAARS-CB-0261

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.1 Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.3	33.4					-23.3	
-23.4	33.5		Some shells and stone fragments recovered		10	-23.4 SPT; Hard drilling from 33.5 to 36.5 feet	50/2"
-26.9	37.0					-26.9 Caloosahatchee Formation	
			SAND: greenish grey, medium dense, poorly graded, subrounded calcitic sand, a little rounded quartz, fine sand, trace silt, wet		11	-28.4 SPT	8, 14, 12
			Same as above		12	-33.4 SPT	9, 10, 11
-38.4	48.5		Gravelly SAND: olive grey, medium dense, moderately graded, subangular calcitic sand, rounded quartz, wet		13	-38.4 SPT	6, 6, 5

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0261

Hole No. CP05-EAARS-CB-0261

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10.1 Sheet 4 of ... Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.7	51.8					-41.7	
			Same as above - chips of stone recovered		14	-43.4 SPT	6, 5, 8
-48.4	58.5		SAND: light grey, dense, poorly graded rounded quartz, fine sand present, trace silt, wet		15	-48.4 SPT	12, 23, 17
			SAND: light grey, medium dense, poor to moderate gradation, rounded quartz, subrounded calcitic sand, wet, fine sand		16	-53.4 SPT	9, 10, 17
			SAND: greenish grey, medium dense poorly graded, subangular, platey, calcitic sand		17	-58.4 SPT	11, 7, 14

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0261

309

Hole No. CP05-EAARS-CB-0261

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.1 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-60.1	70.2					-60.1	
			SAND: greenish grey, medium dense, poorly graded, subrounded calcitic sand, rounded quartz, wet		18	-63.4 SPT; one piece of limestone recovered	7, 11, 14
			SAND: greenish grey, medium dense, moderately graded, subangular calcitic sand, rounded quartz, wet, shell fragments recovered		19	-68.4 SPT	11, 12, 14
			SAND: olive grey, medium dense, poorly graded, subangular calcitic sand, rounded quartz, wet, fine sand, trace silt		20	-73.4 SPT	9, 7, 10
						-78.4	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

Continued

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0261

310

Hole No. CP05-EAARS-CB-0261

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.1 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.5	88.6		SAND: greenish grey, medium dense, poor to moderate, more gravelly gradation, subrounded quartz, subangular calcitic sand, wet, trace phosphate		21	-78.5 SPT; more gravelly	13, 11, 16
			SAND: greenish grey, medium dense, poorly graded, subrounded quartz, subangular calcitic sand, wet, trace phosphate		22	-83.4 SPT	9, 7, 9
-89.9	100.0		SAND: greenish grey, medium dense, poorly graded, rounded quartz, subangular calcitic sand, wet		23	-88.4 SPT	11, 12, 17
			End of Boring at 100'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93. 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0261

Hole No. CP05-EAARS-CB-0262

DRILLING LOG	Division:	Installation:	Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N763551, E781692.6 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: CME-55	
4. Hole No: CP05-EAARS-CB-0262		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Robert DeAngelis		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 7/18/2005 Completed 7/20/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 11.8 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100.5 ft		19. Inspector: J. Petrie	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
11.8	0.0		GRAVEL; light creamy grey, medium dense, fine, some coarse, angular to subangular, dry, silty and sandy		1	11.8 SPT; Road base 9.8	15, 13, 4
9.8	2.0		2' to 4.5' under our weight - no recovery Peat on side of SPT		2	SPT 6.8	0
			3" soft brown PEAT, then organic CLAY, very soft, brown black, wet		3	SPT 5.3	0, 0, 3
5.3	6.5		Light grey, thinly bedded, moderately strong to strong, fine grained LIMESTONE with rodent/worm holes Light grey and creamy brown, molted, medium bedded, moderately strong to strong, fine grained, shelly LIMESTONE becoming porous for bottom 0.3'	48 (RQD 30%)	1	HQ coring; UCS=3890psi 0.3	
0.3	11.5		Gravelly SAND: light grey, medium dense, well graded, fine to coarse, angular to subangular, wet; gravel flakes (fine size), limestone shell fragments			-2.2	
					4	SPT (continued)	10, 15

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0262

Hole No. CP05-EAARS-CB-0262

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11.8 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-3.2	15.0					-3.2	8
-7.2	19.0		Clayey SAND: light grey, medium dense, well graded, fine to coarse, subangular, wet, shelly, fine quartz, calcareous sand		5	-7.2 SPT; soft and hard bands 0.5' thick	7 11 8
-12.2	24.0		SAND: light grey, medium dense, well graded, fine to medium, subangular with some fine gravel sized cemented sand, pieces and traces of clay, black rounded grains, fine medium sand		6	-12.2 SPT; thin cemented horizons less than 0.5' thick	2 3 11
-17.2	29.0		Clayey SAND: dark brown, loose, well graded, fine o coarse, some hard cemented fine gravel, subangular, shelly		7	-17.2 SPT	5 4 14

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0262

313

Hole No. CP05-EAARS-CB-0262

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11.8 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation:

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-21.6	33.4					-21.6	
-22.2	34.0					-22.2	
			Only gravel pieces recovered		8	SPT	50/5"
-27.2	39.0					-27.2	
			Gravelly SAND: light grey, medium dense, well graded, fine to coarse, angular to subangular, fine, some coarse strong cemented sand, with subrounded quartz grain, shells and fragments		9	SPT	12 8 6
-32.2	44.0					-32.2	
			SAND: light creamy grey, medium dense, well graded, fine to coarse, subangular, mostly quartz, subrounded		10	SPT; Quick drilling, occasional rattle	4 10 16
						-37.2	
			As above, shelly fine to medium, sand fragments, (50/50 quartz shells), some subangular gravel, cemented sand		11	SPT	4 6 6

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0262

314

Hole No. CP05-EAARS-CB-0262

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 11.8 | Sheet 4 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-40.0	51.8					-40.0	
-42.2	54.0		Gravelly SAND: light grey, medium dense, well graded, fine to coarse, subrounded, rounded, wet, moderately cemented sand (fine gravel size), shell fragments and quartz		12	-42.2 SPT	3 5 5
			Gravelly SAND: light grey, medium dense, well graded, fine to medium, some coarse, subangular, wet, some subangular, angular cemented sand (fine gravel size), trace black mineral, subrounded medium sand, shelly fragments (quartz/shells, 50/50)		13	-47.2 SPT	13 4 8
-52.2	64.0		SAND: light grey, medium dense, well graded, fine to medium, some coarse, subangular, with some moderately cemented sand (angular fine occasional coarse gravel size) shell fragments (quartz/shell 50/50)		14	-52.2 SPT: Occasional cemented horizon 3" thick	12 10 10
			SAND: light greenish grey, medium dense, well graded, fine and medium, subangular, mostly quartz, occasional		15	-57.2 SPT: Occasional	7 7

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0262

315

Hole No. CP05-EAARS-CB-0262

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11.8 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-58.4	70.2		shelly fragments			-58.4 cemented horizon 3" thick	9
			SAND: as above for 0.7' then Sandy GRAVEL, grey, medium dense, fine occasional coarse, subangular, cemented (moderately) fine to medium, some coarse sand with shelly fragments, mostly quartz sand		16	-62.2 SPT	3 6 22
-67.2	79.0		Sandy GRAVEL: grey, dense, fine, coarse, well graded, subangular, cemented (Hard) fine to coarse sand with shell fragments		17	-67.2 SPT: "Gravelly drilling"	33 50/1"
-72.2	84.0		No recovery		18	-72.2 SPT: 1 ft thick hard cemented band	50/1"

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0262

316

Hole No. CP05-EAARS-CB-0262

DRILLING LOG (Cont Sheet) | Elevation Top of Hole 11.8 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-76.8	88.6					-76.8	
						-77.2	
			SAND: grey, medium dense, fine to coarse, well graded, subangular, some angular cemented sand, (fine gravel size) mostly quartz, trace shells		19	SPT	7 9 11
						-82.2	
			SAND: grey, medium dense, fine to coarse, well graded, subangular to angular, pieces cemented sand (fine grained), quartz/shells 50/50		20	SPT	11 8 10
						-87.2	
			SAND: grey, medium dense, well graded, subangular to subrounded, mostly quartz, some shell fragments		21	SPT	5 8 8
-88.7	100.5						
			End of Boring at 100.5'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0262

317

Hole No. CP05-EAARS-CB-0263

DRILLING LOG — Division:	Installation: Sheet 1 of 8 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N759777, E784912.6 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0263	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Erik Bluemke	14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole: Started 7/29/2005, Completed 8/2/2005
7. Thickness of Burden: N/A	17. Elevation Top of Hole: 11 (ft)
8. Thickness of cap rock: N/A	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: N. Holst

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
11.0	0.0		PEAT: black, dry, medium dense, fine grained, organic, with some fine to coarse, angular limestone gravel. Moist at 3.6 ft		1	11.0 SPT; Fill 9.5	5, 5, 6
					2	SPT 8.0	10, 7, 4
					3	SPT 6.5	4, 2, 3
6.5	4.5		Silty SAND: light brownish grey, wet, medium dense, well graded, fine to coarse, angular, calcitic, slightly plastic with some angular, fine to coarse, limestone, gravel		4	SPT 5.0	16, 10, 14
4.6	6.4		LIMESTONE caprock		5	SPT; Limestone caprock from 6.4 to 11 ft 3.5	50/5"
					6	2.5 SPT; Only limestone chips at 7.5 ft; Hard drilling from 7.5 to 8.5 ft	50/2"
				20 (RQD 0%)	1	HQ coring -2.5	
0.0	11.0		Sandy GRAVEL: light brownish grey, very dense, wet, well graded, fine to coarse, angular, limestone				
					7	SPT; Quit at 13.5 ft on 7/29/05; Resumed 8/2/05; Hard drilling	30, 50/3"

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0263

Hole No. CP05-EAARS-CB-0263

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 11 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.0	15.0					-4.0 from 13.5 to 14.5 ft	
-7.5	18.5		SAND: pale brownish grey, medium dense, wet, well graded, fine to coarse grained, angular, calcitic, trace silt		8	-7.5 SPT	12 4 7
-12.5	23.5		Gravelly SAND: as above but pale greenish grey with fine to coarse, subangular limestone gravel		9	-12.5 SPT	7 6 6
-17.5	28.5		SAND: as above but less (some) gravel and a trace very fine, subrounded, quartzose sand		10	-17.5 SPT	10 50/3"

16 18 20 22 24 26 28 30 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0263

Hole No. CP05-EAARS-CB-0263

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-22.4	33.4					-22.4	
			SAND: as above but very dense and no gravel		11	-22.5 SPT; Hard drilling from 34 to 38.5 ft	50/6"
			No recovery		12	-27.5 SPT; Spoon bouncing	50/0"
			SAND: pale greenish grey, dense, wet, most uniform, fine grained, subrounded and quartzose, trace fine to coarse, angular, calcitic sand		13	-32.5 SPT; Caloosahatchee Formation	10 18 17
			SAND: as above but medium dense		14	-37.5 SPT	10 11 12

(continued)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0263

Hole No. CP05-EAARS-CB-0263

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-40.8	51.8					-40.8	
						-42.5	
			SAND: as above, medium dense		15	SPT	8 6 8
						-47.5	
			SAND: as above but loose		16	SPT	6 3 5
						-52.5	
			SAND: as above		17	SPT	3 4 5
						-57.5	
			SAND: as above but very loose		18	SPT	1

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0263

Hole No. CP05-EAARS-CB-0263

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.2	70.2					-59.2	
-62.5	73.5		Sandy GRAVEL: pale greenish grey, very dense, wet, well graded, fine to coarse, angular, sandy limestone and calcareous sandstone		19	-62.5 SPT; Intermittent hard drilling from 75 to 78.5 ft	38 42 20
			Sandy GRAVEL: as above		20	-67.5 SPT	50/3"
-72.5	83.5		SAND: light greenish grey, dense, wet, well graded, fine to medium grained, equal parts subrounded quartz and angular, calcitic sand		21	-72.5 SPT	14 16 14
						-77.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0263

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Hole No. CP05-EAARS-CB-0263

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 11 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-77.6	88.6		SAND: light greenish grey, dense, wet, well graded, fine to coarse grained, mostly angular, calcitic, trace subrounded quartzose		22	-77.6 SPT	14, 15, 16
			SAND: as above but with some fine gravel and medium dense		23	-82.5 SPT	11, 12, 11
-89.0	100.0		SAND: as above with some fine gravel but dense		24	-87.5 SPT	14, 19, 14
			End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0263

Hole No. CP05-EAARS-CB-0264

DRILLING LOG	Division:	Installation:	Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N756489.3, E786955.6 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0264		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Erik Bluemke		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
7. Thickness of Burden: N/A		16. Date Hole Started 7/19/2005 Completed 7/19/2005	
8. Thickness of cap rock: N/A		17. Elevation Top of Hole: 13 (ft)	
9. Depth of hole: 100 ft		18. Total Core Recovery for hole: N/A	
		19. Inspector: N. Holst	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
13.0	0.0		Gravelly SAND: yellowish grey to light brown, dry, very dense, well graded, fine to coarse grained, angular, calcitic, roadfill		1	13.0 SPT 11.5	39, 40, 33
					2	SPT	18, 18, 23
9.5	3.5		PEAT at 3.5 ft to 5.7 ft		3	9.5 SPT 8.0	1, 2, 2
7.3	5.7		Gravelly CLAY: dark gray, plastic, soft		4	SPT 6.5	2, 1, 50/5"
6.5	6.5		LIMESTONE: pale yellow grey, grey and light brown, fine grained, thinly bedded, fossiliferous, vuggy, moderately strong and hard to soft and weak	64 (RQD 40%)	1	HQ coring; UCS=1530psi	
3.0	10.0		GRAVEL: pale brownish grey, wet, loose, angular, calcitic, trace sand		5	1.5 SPT -0.5	2, 2, 5
			GRAVEL: as above but very dense		6	SPT: Hard drilling from 13.9 to 18 ft, then intermittent hard (continued)	50/4"

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0264

Hole No. CP05-EAARS-CB-0264

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 13 | Sheet 2 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-2.0	15.0					-2.0 drilling to 16.5 and partial loss of drilling fluid	
-5.5	18.5		SAND: pale brownish grey, wet, loose, well graded, fine to medium grained, angular, calcitic, some gravel and some silt		7	-5.5 SPT	3 1 6
			SAND: as above but loose and no gravel		8	-10.5 SPT	5 5 4
			SAND: as above but dense with a trace fine gravel		9	-15.5 SPT	13 18 17

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0264

325

Hole No. CP05-EAARS-CB-0264

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 13 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-20.4	33.4					-20.4	
-20.5	33.5		Gravelly SAND: as above but more gravel		10	-20.5 SPT	50/3"
-25.5	38.5		Only one angular fragment of LIMESTONE recovered		11	-25.5 SPT; Spoon bouncing; Hard drilling from 38.5 to 42 ft	50/0"
-29.0	42.0		SAND: pale brownish grey to grey, wet, dense, poorly graded, fine grained, subrounded, quartzose with a trace to some fine to coarse, angular, calcitic sand		12	-30.5 SPT; Caloosahatchee Formation	20 17 17
			SAND: as above but pale greenish grey and medium dense, very little calcitic sand <1%		13	-35.5 SPT	9 7 11

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0264

326

Hole No. CP05-EAARS-CB-0264

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 13 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-38.8	51.8					-38.8	
			SAND: as above with very little calcitic sand		14	-40.5 SPT	6 8 12
			SAND: as above		15	-45.5 SPT	5 5 8
			SAND: as above but loose		16	-50.5 SPT	2 2 2
			SAND: pale greenish grey, wet, dense, gap graded, fine to coarse grained, subequal amounts of fine grained, subrounded, quartzose and fine to coarse, angular, calcitic, some gravel		17	-55.5 SPT; Ochopee Limestone	13 18 14

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0264

327

Hole No. CP05-EAARS-CB-0264

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 13 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-57.2	70.2					-57.2	
						-60.5	
			SAND: as above but medium dense, mostly calcitic, fine to coarse grained, angular with trace silt		18	SPT	8 8 11
-65.5	78.5					-65.5	
			Only Sandy LIMESTONE chips recovered		19	SPT; Intermittent hard drilling from 78.5 to 83.3 ft	50/2"
-70.3	83.3					-70.5	
			SAND: pale greenish grey, wet, medium dense, poorly graded, mostly fine to coarse grained, angular, calcitic with fine grained, subrounded, quartzose in lesser amount		20	SPT	29 18 11
						-75.5	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0264

328

Hole No. CP05-EAARS-CB-0264

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 13 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-75.6	88.6		SAND: as above but medium grey		21	-75.6 SPT	9, 5, 6
			SAND: light greenish grey, wet, dense, poorly graded, fine to coarse grained, fine sand is subrounded and quartzose, medium to coarse is angular, calcite cemented aggregates of the fine		22	-80.5 SPT	16, 16, 16
			SAND: as above but trace calcitic (shell fragments) sand		23	-85.5 SPT	13, 23, 26
-87.0	100.0						
			End of Boring at 100'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0264

329

Hole No. CP05-EAARS-CB-0265

DRILLING LOG — Division:	Installation: — Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1	10. Size and type of bit: 3" bit, Rotary Method
2. Location: N753196.9, E789525.6 - NAD 1983	11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.	12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0265	13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Erik Bluemke	14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined	15. Elevation Ground Water: Not measured
	16. Date Hole Started 7/28/2005 Completed 7/28/2005
7. Thickness of Burden: N/A	17. Elevation Top of Hole: 10.9 (ft)
8. Thickness of cap rock: N/A	18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft	19. Inspector: N. Holst

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/0.5'
10.9	0.0		PEAT: black, fine grained, moist, loose to moderately dense, organic		1	10.9 SPT 9.4	4, 4, 9
					2	SPT 7.9	5, 5, 3
			Wet at 3.0 ft, limestone chips		3	SPT 6.5	0, 0, 18
6.5	4.4		LIMESTONE: tan, fine to coarse, thinly bedded, fossiliferous, vuggy, strong and hard to soft, weak, porous, friable		4	6.4 5.7 SPT	50/0"
			Limestone above is probably a boulder in Fill			HQ coring; GW: Well graded gravel with sand; Hard drilling at 4.4 ft; Spoon bouncing	
3.9	7.0		PEAT: as above and limestone chips			Limestone is probably a boulder in Fill	
					5	1.4 SPT	50/5"
-2.1	13.0		Silty SAND: pale greenish grey, well graded, fine to coarse grained, angular, calcitic, loose, trace limestone gravel, wet		6	-2.8 SPT: Hard drilling from 12.5 to 13 ft	3, 5, 3

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0265

Hole No. CP05-EAARS-CB-0265

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.9 | Sheet 2 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.1	15.0					-4.1	
-7.6	18.5		SAND: as above but pale brownish grey, medium dense, and less (trace) silt		7	-7.6 SPT	6, 13, 15
			SAND: pale greenish grey, wet, well graded, fine to coarse, angular calcitic, loose, some silt, trace very fine quartz sand		8	-12.6 SPT	7, 5, 4
			SAND: as above but pale brownish grey with trace plastic fines (clay?) and more (some) very fine quartz sand		9	-17.6 SPT; Spun 4" casing to 10 ft	14, 5, 11
						-19.1 Caloosahatchee Formation	

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0265

Hole No. CP05-EAARS-CB-0265

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.9 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-22.5	33.4					-22.5	
			SAND: pale greenish grey, wet, medium dense, well graded, subequal amount, fine, quartz, subrounded and fine to coarse, angular, calcitic sand, trace gravel		10	-22.6 SPT; Firm to hard drilling to 38.5 ft	3 4 15
			SAND: as above with limestone chips		11	-27.6 SPT	50/4"
-32.6	43.5		Sandy GRAVEL: pale greenish grey, dense, wet, poorly graded, fine angular sandy limestone gravel with sand as above		12	-32.6 SPT	13 17 21
-37.6	48.5		SAND: light olive grey, dense, wet, mostly uniform, fine grained, quartzose, some fine to coarse, angular, calcitic		13	-37.6 SPT	9 11 20

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0265

Hole No. CP05-EAARS-CB-0265

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.9 Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-40.9	51.8					-40.9	
			SAND: as above but only a trace calcitic sand, almost all fine quartz and medium dense, trace silt		14	-42.6 SPT	10 9 10
			SAND: as above		15	-47.6 SPT	5 6 7
			SAND: as above but loose		16	-52.6 SPT	3 3 3
			SAND: pale greenish grey, wet, medium dense, poorly graded, subequal portions, fine subrounded, quartzose and fine to coarse, angular calcitic trace gravel		17	-57.6 SPT, Ochopee Limestone	11 10 13

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0265

Hole No. CP05-EAARS-CB-0265

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10.9 Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.3	70.2				-59.3	
-62.6	73.5	Gravelly SAND: asa above but very dense and more fine, angular gravel consisting of shell fragments and cemented aggregates		18	-62.6 SPT	32 30 50/5"
		Gravelly SAND: as above, but medium dense and trace silt		19	-67.6 SPT	28 14 14
		Gravelly SAND: as above but very dense and light olive grey, trace silt		20	-72.6 SPT	11 50/4"
					-77.6	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0265

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Hole No. CP05-EAARS-CB-0265

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.9 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-77.7	88.6		Gravelly SAND: as above but light greenish grey, medium dense		21	-77.7 SPT	15, 10, 11
			Gravelly SAND: as above		22	-82.6 SPT	23, 17, 25
-87.6	98.5		SAND: light grey, wet, medium dense, mostly uniform, fine grained, subrounded, quartzose, some fine to medium grained, angular, calcitic		23	-87.6 SPT	8, 7, 7
-89.1	100.0		End of Boring at 100'				

NOTES:
1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93
2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0265

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Hole No. CP05-EAARS-CB-0266

DRILLING LOG	Division	Installation	Sheet 1 of 8 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N750586, E791226.8 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0266		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Travis Williams		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 7/6/2005 Completed 7/6/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 10.3 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: A.M. Noronha	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.3	0.0		SAND: light brownish grey, wet, top 0.5 ft medium dense, semi angular calcitic sand, shell fragments, trace gravel and silt			10.3	15
9.3	1.0				1	9.3 SPT	50/5"
			CORE: only a few chips of limestone recovered, pale white, shell fragments in chips	16 (RQD 0%)	1	HQ coring: Core: 1.0 to 4.0 ft	
6.3	4.0					6.3	
						4.8	
			Gravelly SAND: grey, wet, very dense, angular, carbonate sand		2	SPT: CO3=76.8%; SW-SM; Well graded sand with silt+gravel; Moisture=13%	7
							32
						3.3	32
			Same as above, except medium dense				5
					3	SPT	6
						1.8	6
			Gravelly SAND: dark greenish grey, wet		4	SPT	50/4"
						0.3	
			Gravelly SAND: angular carbonate sand		5	SPT: spoon bouncing. Quite hard drilling from 9.0 to 15.5 ft	22
							50/1"
-1.2	11.5					-1.2	
			SAND: finer particles, trace silt, very dense		6	SPT: SM: Silty sand; Moisture=24%	30
							50/4"
						-2.7	
			Same as above, shelly fragments recovered		7	SPT	39
							11
						-4.2	42
			SAND: greenish grey, wet, very dense				50/5"

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0266

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Hole No. CP05-EAARS-CB-0266

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.3 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.7	15.0		semiangular, carbonate sand			-4.7	
			SAND: light grey, wet, very loose, semi-angular carbonate sand		8	-5.7 SPT; SM; Silty sand with gravel; Moisture=34%	7
					9	SPT; SM; Silty sand; Moisture=36% -7.2	4 4
			Same as above, but dense		10	SPT -8.7	7 17 20
			Same as above, except medium dense and more silt		11	SPT -10.2	4 3 9
			SAND: light grey, wet, medium dense, angular carbonate sand, trace phosphate		12	SPT; SM; Silty sand; Moisture=87% -11.7	13 5 10
			Same as above, shell fragments recovered		13	SPT -13.2	8 9 7
			Same as above		14	SPT -14.7	4 4 5
			Trace semi round quartz		15	SPT -16.2	8 7 50/5"
			Sand: greenish grey, wet, dense, semiangular carbonate sand, semi round quartz, trace silt		16	SPT; SW-SM; Well graded sand with silt; Moisture=22% -17.7	7 30 9
					17	SPT -19.2	8 9 13
			Shell fragments		18	SPT; lost circulation at 30 ft -20.7	50/4"
			SAND: light grey, wet, medium dense, round quartz, semiangular carbonate sand		19	SPT; SM; Silty sand; Moisture=22% -22.2	24 13 10
			Same as above, except very dense				11 50/4"

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0266

Hole No. CP05-EAARS-CB-0266

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.3 | Sheet 3 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/0.5'
-23.1	33.4					-23.1	
			Same as above		20	-23.7 SPT, spoon bouncing	50/3"
					21	SPT, spoon bouncing	
			Same as above		22	-25.2 SPT	50/5"
			SAND: light grey, wet, dense, semi angular quartz and carbonate sand, trace silt and phosphate		23	-26.7 SPT; SW-SM: Well graded sand with silt; Moisture=27%; lost circulation at 37 ft	40, 30, 17, 11
			Same as above, except medium dense, shells recovered		24	-28.2 SPT	6, 6
-29.7	40.0		Hard dark fragments and shell pieces recovered		25	-29.7 SPT	50/4"
					26	-31.2 SPT, spoon bouncing	50/5"
			Gravelly SAND: greenish grey, wet, very dense, angular, carbonate sand		27	-32.7 SPT	31, 31, 20
-34.2	44.5		SAND: greenish grey, wet, medium dense, mostly semiround quartz, trace silt and phosphate		28	-34.2 SPT; SP: Poorly graded sand; Moisture=25%; Caloosahatchee Formation	6, 11, 12, 9
			Top part of sample as above. Bottom part chips of limestone		29	-35.7 SPT	9, 9
-36.7	47.0		Chips of limestone				
-37.2	47.5		Same as above (top portion of above sample)		30	-37.2 SPT	8, 9, 20
-38.7	49.0		Gravelly SAND: greenish grey, wet, medium dense, semiround quartz and semi angular carbonate sand		31	-38.7 SPT; SW-SM: Well graded sand with silt; Moisture=21%	4, 6, 10
			As above, but light grey color, fine sand present		32	-40.2 SPT. Borehole starting to cave in at	6, 9

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0266

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Hole No. CP05-EAARS-CB-0266

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.3 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.5	51.8					-41.5	
			Dense, one big chip limestone and shell pieces recovered		33	-41.7 50 ft; Temporary casing 0 to 45 ft SPT -43.2	7, 15, 14, 20
-43.2	53.5		SAND: greenish grey, wet, medium dense, semiround quartz, fine sand present		34	SPT -44.7	6, 7, 9
			Same as above and shelly and subangular carbonate sand		35	SPT; SM; Silty sand; Moisture=30% -46.2	6, 5, 10
			Same as above		36	SPT -47.7	5, 6, 10
			Same as above		37	SPT -49.2	15, 19, 22
-49.2	59.5		Gravelly SAND: greenish grey, wet, medium dense		38	SPT -50.7	7, 17, 6
-50.7	61.0		SAND: light grey, wet, medium dense, shell fragments, semi angular quartz and carbonate sand, trace phosphate		39	SPT; SW-SM; Well graded sand with silt+gravel; Moisture=30% -52.2	2, 6, 7
					40	SPT -53.7	10, 11, 14
					41	SPT -55.2	10, 20, 15
			SAND: greenish grey, wet, dense, semiangular quartz and carbonate sand, fine sand present		42	SPT; SW-SM; Well graded sand with silt; Moisture=22% -56.7	11, 17, 22
			Same as above except medium dense		43	SPT -58.2	8, 14, 14
			Shells recovered		44	SPT; SW-SM; Well graded sand with silt+gravel; -59.7	9, 15, 7
-59.7	70.0						

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0266

Hole No. CP05-EAARS-CB-0266

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.3 | Sheet 5 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'	
-59.9	70.2					-59.9		
			Chips of limestone; semi angular carbonate sand, angular quartz, pieces of shell, trace phosphate		45	-61.2 Moisture=22% SPT	11 50/4"	
			Same as above, except dense		46	-62.7 SPT; spoon bouncing, Temporary casing from 45 to 70 ft	20 19 15	72
-62.7	73.0		SAND: light grey, wet, medium dense. Chips of limestone recovered from bottom of sample		47	-64.2 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=21%	12 13 15 ~~16~~	74
					48	-65.7 SPT; Hard drilling from 74 to 76 ft; spoon bouncing	14 50/6"	
			Gravelly SAND: greenish grey, wet, very dense		49	-67.2 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=18%; spoon bouncing	13 50/4" 20	76
			Gravelly SAND: olive grey, wet, dense, semi round quartz		50	-68.7 SPT	15 21	78
			Same as above, except medium dense		51	-70.2 SPT	17 9 9	80
			Same as above		52	-71.7 SPT	14 13 15	
			Same as above, except dense		53	-73.2 SPT	14 20 20	82
			Same as above		54	-74.7 SPT	17 17 19	84
			Gravelly SAND: olive grey, wet, dense, semiround quartz, trace silt		55	-75.2 SPT; GW-GM; Well graded gravel with silt and sand; Moisture=14%	18 21 15 ~~17~~	86
			Same as above		56	-77.7 SPT	16 18	
			Predominantly semi round quartz, fine sand present				21	88

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0266

Hole No. CP05-EAARS-CB-0266

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.3 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.3	88.6					-78.3	17
					57	-79.2 SPT	20
			Gravelly SAND: olive grey, wet, medium dense, semi round quartz, angular carbonate sand,trace silt				31
					58	-80.7 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=14%	13
							11
							13
					59	SPT	11
						-82.2	8
			SAme as above, except dense				16
					60	SPT	25
						-83.7	18
			Same as above, except medium dense				10
					61	SPT	10
						-85.2	10
			Same as above				10
					62	SPT	12
						-86.7	10
			Same as above				12
					63	SPT	12
						-88.2	11
			Same as above				15
					64	SPT	15
-89.7	100.0						15
			End of Boring at 100'				

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

NOTES:
1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93
2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0266

Hole No. CP05-EAARS-CB-0267

DRILLING LOG	Division	Installation	Sheet 1 of 8 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N750246, E787702.1 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0267		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Travis Williams		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 7/14/2005 Completed 7/14/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 10.7 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: A.M. Noronha	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.7	0.0		SAND: greenish grey, very dense, moderate to well graded, angular calcitic sand, dry		1	10.7 SPT; chips of limestone recovered 9.2	19, 38, 50/5"
			Same as above, except wet to dry		2	SPT, hard drilling from 1 to 3 ft 7.7	27, 38, 50/5"
7.7	3.0		Gravelly SAND: pale to greenish grey, medium dense, poorly graded, angular, wet		3	SPT 6.2	5, 9, 8
6.2	4.5		SAND: olive grey, very dense, moderately graded, angular calcitic sand, wet, fine sand, trace silt		4	SPT 4.7	6, 11, 50/3"
4.7	6.0		CORE LIMESTONE: white, very hard, quite porous, shells in upper core portion	54 (RQD 29%)	1	HQ coring, Core 6 to 9.5 ft 1.2	
1.2	9.5		SAND: greenish grey, dense, moderately graded, subangular calcitic sand, wet		5	SPT, limestone chips recovered at the bottom of the sample -2.8	1, 3, 32
			SAND: greenish grey, very loose, subangular calcitic sand, wet		6	SPT	1, 1, 3

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0267

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Hole No. CP05-EAARS-CB-0267

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.7 Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.3	15.0					-4.3	
			SAND: light grey, medium dense, moderately graded, subrounded, calcitic sand, wet		7	-7.8 SPT	6, 8, 9
			Same as above, except very dense		8	-12.8 SPT; spoon bouncing	38, 50/1"
			SAND: greenish grey, very dense, angular, calcitic sand, gravel present, wet		9	-17.8 SPT; Hard drilling from 24.5 to 37.5 ft	50/5"

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0267

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Hole No. CP05-EAARS-CB-0267

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.7 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-22.7	33.4		Nothing recovered		10	-22.7 -22.8 SPT; spoon bouncing	50/0"
-27.3	38.0		Gravelly SAND: greenish grey, dense, poorly graded, subrounded calcitic sand, rounded quartz, wet		11	-27.8 SPT; Caloosahatchee Formation	8 6 28
			Gravelly SAND: brownish grey, medium dense, subangular, calcitic sand, subrounded quartz, wet		12	-32.8 SPT	10 13 12
-37.8	48.5		SAND: greenish grey, very dense, rounded quartz, subrounded calcitic sand, poorly graded, wet		13	-37.8 SPT	32 50/4"

(continued)

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0267

344

Hole No. CP05-EAARS-CB-0267

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.7 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.1	51.8					-41.1	
			Same as above		14	-42.8 SPT	28 50/5"
			SAND: greenish grey, dense, rounded quartz, subangular calcitic sand, wet		15	-47.8 SPT	17 15 17
			SAND: greenish grey, dense, moderately graded, subangular calcitic sand, wet		16	-52.8 SPT	15 16 16
			Same as above, except chips of limestone and shell fragments recovered.		17	-57.8 SPT	11 14 31

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0267

345

Hole No. CP05-EAARS-CB-0267

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.7 | Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.5	70.2					-59.5	
			SAND: greenish grey, very dense, poorly graded, subangular calcitic sand, rounded quartz, wet, fine sand present, trace silt		18	-62.8 SPT	17 24 27
			Same as above		19	-67.8 SPT	6 24 50/4"
			SAND: olive grey, loose, poorly graded, angular calcitic sand, subrounded quartz, wet, shells present		20	-72.8 SPT	4 5 3
-77.8	88.5					-77.8	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0267

346

Hole No. CP05-EAARS-CB-0267

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10.7	Sheet 6 of 6 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-77.9	88.6		Silty SAND: olive grey, medium dense, poorly graded, rounded quartz, wet, predominately fine sand present, trace silt		21	-77.9 SPT; SM; Silty SAND; Moisture=21%	3 6 8
-82.8	93.5		SAND: olive grey, dense, poorly graded, subrounded quartz, and calcitic sand, wet		22	-82.8 SPT	25 11 24
			SAND: olive grey, dense, moderately graded, sub rounded quartz, sub angular calcetic sand, wet		23	-87.8 SPT	21 20 15
-89.3	100.0		End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0267

Hole No. CP05-EAARS-CB-0268

DRILLING LOG	Division:	Installation:	Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N750548.1, E784360.9 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No. CP05-EAARS-CB-0268		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Travis Williams		14. Total Number of Core Boxes: 1	
6. Direction of Hole ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 7/11/2005 Completed 7/11/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 8.2 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: A.M. Noronha	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
8.2	0.0		Silty SAND (Peat): black, loose, fine grain, dry to wet, mostly organic		1	8.2 SPT 6.7	1, 2, 4
6.5	1.8		One piece of hardstone recovered, possibly limestone LIMESTONE: white, a little porous, hard, shells present	50 (RQD 12%)	1	6.2 SPT HQ coring	50/4"
1.2	7.0		Gravelly SAND: light grey, dense, wet, angular, carbonate sand, silt and shells present		3	1.2 SPT; CO3=81.6% -0.3	4, 25, 22
			Same as above, except loose		4	SPT	7, 4, 4
-5.3	13.5		SAND: white, loose, wet, angular, carbonate sand, fine sand present, trace silt		5	-5.3 SPT; SM, Silty sand, Moisture=30%	6, 4, 3

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0268

ENG FORM 1836 (previous editions are obsolete)

Hole No. CP05-EAARS-CB-0268

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 8.2 Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-6.8	15.0					-6.8	
			SAND: white, very dense, wet, angular carbonate sand, chips of limestone recovered		6	-10.3 SPT; GP-GM; Poorly graded gravel with silt and sand; Moisture=22%; Hard drilling from 19 to 32 ft	4 50/5"
			Nothing recovered		7	-15.3 SPT; spoon bouncing	50/2"
-20.3	28.5		Chips of limestone recovered, white, porous, shelly		8	-20.3 SPT	50/2"
-24.3	32.5						

16 18 20 22 24 26 28 30 32

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0268

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Hole No. CP05-EAARS-CB-0268

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 8.2 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-25.2	33.4					-25.2	
			SAND: light grey, dense, wet, rounded quartz sand, angular carbonate sand, fine sand and silt		9	-25.3 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=18%; Caloosahatchee Formation	15 18 14
			SAND: light grey, dense, wet, rounded quartz, semiangular carbonate sand, more fine sand present, shells present		10	-30.3 SPT	11 22 26
			SAND: greenish grey, dense, wet, rounded quartz, angular carbonate sand, shells present		11	-35.3 SPT	11 15 26
-40.3	48.5		Same as above, more gravelly		12	-40.3 SPT	6 7 6

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0268

Hole No. CP05-EAARS-CB-0268

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.2 | Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-43.6	51.8					-43.6	
-45.3	53.5					-45.3	
			SAND: greenish grey, dense, wet, angular carbonate sand, semiangular quartz		13	SPT	11 15 16
						-50.3	
			SAND: light grey, very dense, wet, angular, carbonate sand		14	SPT	10 15 50/5"
						-55.3	
			SAND: brownish grey, dense, wet, semiangular carbonate and quartz sand, 3 chips of limestone recovered at the bottom of sample		15	-56.3 SPT, hard drilling from 61 to 62 ft	14 16 31
						Hard drilling from 64.5 to 65.5 ft	
						-60.3	
			SAND: olive grey, medium dense, wet, round quartz, angular carbonate sand, fine sand present		16	SPT: one chip of limestone recovered on the top of the	10 9 5

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0268

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Hole No. CP05-EAARS-CB-0268

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.2 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-62.0	70.2					-62.0 sample	
			SAND: olive grey, medium dense, angular carbonate sand, semi angular quartz, many shell fragments		17	-65.3 SPT; very shelly sample	3 5 8
-70.3	78.5		Silty SAND: olive grey, loose, wet, round quartz, angular carbonate sand, fine sand present		18	-70.3 SPT, SM; Silty Sand, Moisture=26%	3 2 4
-76.0	84.2		Silty SAND: loose, wet, round quartz, semiround carbonate sand			-75.3	
-76.2	84.4		2" yellowish orange limestone chips		19	SPT; Ochopee Limestone	9 3 5
			Gravelly SAND: loose, wet, round quartz, semiround carbonate sand			-80.3 (continued)	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0268

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Hole No. CP05-EAARS-CB-0268

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 8.2	Sheet 6 of 6 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-80.4	88.6		Gravelly SAND: olive grey, dense, wet, round quartz, semiround carbonate sand		20	-80.4 SPT	14 14 18
			Gravelly SAND: olive grey, medium dense, wet, semiround quartz, semiangular carbonate sand		21	-85.3 SPT	14 8 14
			Same as above		22	-90.3 SPT	12 13 19
-91.8	100.0						
			End of Boring at 100'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0268

Hole No. CP05-EAARS-CB-0269

DRILLING LOG	Division:	Installation: Sheet 1 of 6 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method
2. Location: N750200.6, E780370.2 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0269		13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Travis Williams		14. Total Number of Core Boxes: 1
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured
		16. Date Hole Started 7/13/2005 Completed 7/13/2005
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 10.6 (ft)
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft		19. Inspector: A.M. Noronha

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.6	0.0		Silty SAND (Peat): black, very loose, wet, mostly organic Couple of limestone chips and peat		1	10.6 SPT; SM; Silty sand with gravel; Moisture=137%; mostly peat; one chip of limestone recovered 9.1	1 1 1
8.4	2.5		LIMESTONE: mostly pale white, few pieces brownish grey, very hard, shell fragments		2	8.1 SPT	4 50/3"
				28 (RQD 10%)	1	HQ coring; UCS=1570psi; core 2.5 to 7.5 ft	
3.1	7.5		SAND: light grey, dense, wet, semiangular carbonate sand, shell fragments			3.1 2.1	
					3	SPT: SW-SM; Well graded sand with silt+gravel; Moisture=24%	10 8 35
			SAND: light grey, medium dense, wet, angular calcitic sand, shell fragments, fine sand present, trace silt		4	-2.9 SPT; SM; Silty sand with gravel; Moisture=32%	5 6 6

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0269

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Hole No. CP05-EAARS-CB-0269

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.6 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.4	15.0					-4.4	
			SAND: greenish grey, very dense, wet, angular calcitic sand, shell fragments, fine sand present, trace silt		5	-7.9 SPT; SW-SM; Well graded sand with silt; Moisture=23%	17 15 50/6"
-12.9	23.5		One piece of brownish grey stone recovered		6	-12.9 SPT; Hard drilling from 19.5 to 32 ft; Spoon bouncing	50/2"
			Chips of limestone recovered		7	-17.9 SPT	50/2"
-21.6	32.2						

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0269

Hole No. CP05-EAARS-CB-0269

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.6 | Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-22.8	33.4					-22.8	
			SAND: light grey, medium dense, semiround quartz, semiangular calcitic sand, fine sand, trace silt		8	-22.9 SPT; SP; Poorly graded sand with gravel; Moisture=16%; Caloosahatchee Formation	16, 8, 8
			SAND: light grey, dense, wet, angular calcitic sand, subrounded quartz, shells present		9	-27.9 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=21%	5, 13, 22
			SAND: greenish grey, dense, wet, subrounded quartz, angular calcitic sand, fine sand present, trace silt, 2 pieces of grey limestone recovered		10	-32.9 SPT	9, 12, 20
			SAND: greenish grey, dense, wet, subangular calcitic sand		11	-37.9 SPT	12, 15, 15

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

(continued)

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0269

Hole No. CP05-EAARS-CB-0269

DRILLING LOG (Cont Sheet) Elevation Top of Hole: 10.6 Sheet 4 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.2	51.8					-41.2	
			SAND: greenish grey, medium dense, wet rounded quartz, angular calcitic sand, more gravelly		12	-42.9 SPT	7 11 12
			SAND: greenish grey, medium dense, wet, angular calcitic sand, rounded quartz, shells present		13	-47.9 SPT	22 11 7
-52.4	63.0		Hard drilling from 63 ft to 66 ft Some stone chips recovered		14	-52.9 SPT; Hard drilling from 63 to 66 ft	50/1"
-55.4	66.0						
			SAND: olive grey, medium dense, wet, angular calcitic sand, rounded quartz, fine sand present		15	-57.9 SPT; Ochopee Limestone	8 7 10

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0269

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Hole No. CP05-EAARS-CB-0269

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.6 Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.6	70.2					-59.6	
			SAND: olive grey, medium dense, wet, semiangular calcitic sand, semi rounded quartz			-62.9	
					16	SPT	5 14 8
			Same as above			-67.9	
					17	SPT	6 6 7
-72.9	83.5		Silty SAND: olive grey, loose, wet, rounded quartz, semiangular calcitic sand, most of the sample fine sand and silt			-72.9	
					18	SPT	7 4 6
						-77.9	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

ENG FORM 1836

PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0269

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Hole No. CP05-EAARS-CB-0269

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 10.6		Sheet 6 of 6 Sheets
Project: EAA Reservoir A-1		Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.0	88.6					-78.0	
			Silty SAND: olive grey, loose, wet		19	SPT	3 3 6
-82.9	93.5					-82.9	
			Gravelly SAND: olive grey, dense, wet semiround quartz, semiangular calcitic sand		20	SPT	5 16 19
-87.9	98.5					-87.9	
			SAND: greenish grey, very dense, wet, semirounded quartz, semiangular calcitic sand, fine sand present, trace silt		21	SPT	35 34 34
-89.4	100.0						
			End of Boring at 100'			NOTES 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0269

Hole No. CP05-EAARS-CB-0270

DRILLING LOG	Division:	Installation:	Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N750191.9, E776521.6 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0270		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Erik Bluemke		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole: Started 7/7/2005, Completed 7/11/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 10.4 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: N. Holst	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.4	0.0		Gravelly SAND: pale brownish grey, moist, medium dense, well graded, fine to coarse grained, calcitic, road fill		1	10.4 SPT 8.9	6, 10, 8
7.9	2.5				2	SPT; SW-SM; Well graded sand with silt+gravel; Moisture=158%	6, 2, 2
6.9	3.5		Peat			6.9	
5.4	5.0		Sandy GRAVEL: weathered LIMESTONE		3	SPT 5.4	25, 17, 50/5"
2.1	8.3		LIMESTONE: tan to light brown, fine grained, fossiliferous, vuggy, hard and strong to soft, weak and porous	26 (RQD 22%)	1	HQ coring; UCS=1860psi. Cased to 5 ft 1.9	
-3.1	13.5		SAND: pale brownish grey, wet, dense, well graded, fine to coarse grained, angular calcitic, trace silt and fine gravel		4	SPT; GW; Silty gravel with sand; Moisture=27% -3.1	4, 15, 34
			Silty SAND: as above but more silt		5	SPT; SW; Well graded sand with gravel. Moisture=36%	3, 5, 13

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ENG FORM 1836

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0270

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Hole No. CP05-EAARS-CB-0270

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 2 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.6	15.0					-4.6	
						-8.1	
-8.6	19.0		GRAVEL: pale brownish grey, wet, very dense, well graded, fine, angular, limestone gravel with some silt and some sand, mostly angular and calcitic, very little quartzose		6	SPT, SW-SM: Well graded sand with silt+gravel; Moisture=26%; Hammer broke on SPT # 6	4 50/3"
-13.1	23.5		Only a few angular, platy chips of LIMESTONE recovered		7	-13.1 SPT: Hard drilling to 31.5 ft	50/1"
			Only a few chips of sandy LIMESTONE recovered		8	-18.1 SPT: Caloosahatchee Formation	50/1"
-21.1	31.5		Drilling faster 31.5 ft to 33.2 ft, then hard drilling 36.5 ft				

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0270

Hole No. CP05-EAARS-CB-0270

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.4 Sheet 3 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-23.0	33.4					-23.0	
			Only a few Sandy LIMESTONE chips recovered		9	-23.1 SPT; Drilling faster 31.5 to 33.2 ft, then hard drilling to 36.5 ft	50/0"
-26.1	36.5						
-28.1	38.5		SAND: pale brownish grey, wet, medium dense, uniform, fine grained, subrounded quartzose, trace calcitic, angular		10	-28.1 SPT	7 8 12
			SAND: as above but with some fine, angular gravel		11	-33.1 SPT	12 10 10
-38.1	48.5		Gravelly SAND: as above but more gravel		12	-38.1 SPT	7 6 9

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0270

Hole No. CP05-EAARS-CB-0270

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 4 of 8 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.4	51.8					-41.4	
-43.1	53.5		SAND: pale greenish grey, wet, medium dense, well graded, mostly fine to coarse grained, angular, calcitic, some fine and quartzose, trace fine gravel and silt		13	-43.1 SPT	10 8 12
			SAND: as above, but pale brownish grey		14	-48.1 SPT	14 12 16
-53.1	63.5		Gravelly SAND: as above but more gravel		15	-53.1 SPT; Hole caving below 61 ft; Cased hole to 65 ft	3 6 20
-58.1	68.5		Only chips of hard calcareous SANDSTONE recovered, about one foot thick		16	-58.1 SPT; Spoon bouncing	60
-59.1	69.5		SAND: olive grey, wet, loose, mostly uniform, fine grained, subrounded				

(continued)

ENG FORM 1836 | PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0270

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Hole No. CP05-EAARS-CB-0270

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.4 Sheet 5 of 6 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.8	70.2		quartzose with trace angular, calcitic, fine to coarse sand and fine gravel			-59.8	
						-63.1	
					17	SPT	4 5 3
			SAND: as above but with a trace silt and medium dense			-68.1	
					18	SPT	3 15 11
			SAND: olive grey, loose, wet, uniform, very fine grained, subrounded, quartzose, trace silt			-73.1	
					19	SPT	3 4 6
						-78.1	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

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PROJECT EAA Reservoir A-1 HOLE NUMBER CP05-EAARS-CB-0270

364

Hole No. CP05-EAARS-CB-0270

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.4 | Sheet 6 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-78.2	88.6		SAND: grey, medium dense, wet, mostly well graded, fine to coarse grained, angular and calcitic, some fine and quartzose, trace silt		20	-78.2 -78.9 SPT Ochopee Limestone	4 9 14
			SAND: grey as above but no silt		21	-83.1 SPT	21 17 12
-88.1	98.5		Gravelly SAND: sand as above but with fine, angular, calcareous gravel and very dense		22	-88.1 SPT	50
-89.6	100.0		End of Boring at 100'				

NOTES:
1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93.
2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)

ENG FORM 1836

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0270

Hole No. CP05-EAARS-CB-0271

DRILLING LOG	Division:	Installation:	Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method	
2. Location: N750122.5, E769324.2 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988	
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50	
4. Hole No: CP05-EAARS-CB-0271		13. Total Number of Overburden Samples Taken: N/A	
5. Name of Driller: Erik Bluemke		14. Total Number of Core Boxes: 1	
6. Direction of Hole: ☒ Vertical ☐ Inclined		15. Elevation Ground Water: Not measured	
		16. Date Hole Started 7/12/2005 Completed 7/13/2005	
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 10.7 (ft)	
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A	
9. Depth of hole: 100 ft		19. Inspector: N. Holst	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
10.7	0.0		Gravelly SAND: pale yellow grey, dry, medium dense, well graded, fine to medium grained, angular, calcitic, becomes wet at 3 ft		1	10.7 SPT; SM; Silty sand with gravel; Moisture=12% 8.7	16, 14, 9
					2	SPT; SM; Silty sand with gravel; Moisture=20%; Road fill 7.2	15, 7, 4, 50/0"
7.2	3.5		LIMESTONE: caprock, tan to light brown, fine grained, fossiliferous, thinly bedded, vuggy, strong and hard to soft, weak and porous	48 (RQD 45%)	3 / 1	7.2 SPT HQ coring; UCS=4620psi; Drill fluid returned black at 3.5 ft 4.2	
				25 (RQD 9%)	2	HQ coring 0.2	
0.7	10.0		Sandy GRAVEL: pale brown-grey, wet, medium dense, well graded, fine to coarse, calcitic, with calcitic sand, trace silt		4	SPT; SM; Silty sand with gravel; Moisture=24%; Soft at 10 ft, Intermittent hard drilling to 13.5 ft -2.8	9, 8, 19
-2.8	13.5		SAND: pale brownish grey, wet, medium dense, well graded, fine to coarse grained, angular calcitic, some fine gravel and some silt		5	SPT; CO3=81.8%	3, 2, 20

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

(continued)

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0271

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Hole No. CP05-EAARS-CB-0271

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.7 | Sheet 2 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-4.3	15.0					-4.3	
						-7.8	
					6	SPT; SM; Silty sand; Moisture=25%	14 11 9
-12.8	23.5		Gravelly SAND: as above but more gravel and very dense			-12.8	
					7	SPT; SW-SM; Well graded sand with silt+gravel; Moisture=22%; 21.5 to 22.5-hard drilling	17 15 50/6"
-17.8	28.5		Only a few angular fragments of LIMESTONE recovered Hard drilling 28.5 to 32.0 ft			-17.8	
					8	SPT; 23.5 to 28.5 intermittent hard drilling	50/2"
-21.3	32.0						

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0271

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Hole No. CP05-EAARS-CB-0271

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 10.7 | Sheet 3 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-22.7	33.4					-22.7	
-22.8	33.5		Only Calcareous SANDSTONE fragments recovered, fine grained, quartzose sand with calcite cement, fossiliferous		9	-22.8 SPT; hard drilling 28.5 to 32 ft; Caloosahatchee Formation	50/2"
-25.8	36.5		SAND: pale brownish grey, wet, medium dense, uniform, fine grained, subrounded, quartzose with trace fine to coarse grained, angular, calcitic, fine sand to fine gravel				
					10	-27.8 SPT, SP-SM; Poorly graded sand with silt and gravel; Moisture=24%; Hard drilling 33.5 to 36.5 ft	6 5 7
			SAND: as above but dense and no calcitic sand or gravel		11	-32.8 SPT	12 14 30
			SAND: as above but very dense and a trace calcitic, angular, fine to coarse sand		12	-37.8 SPT	16 50/4"

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

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ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE

PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0271

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Hole No. CP05-EAARS-CB-0271

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.7 | Sheet 4 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-41.1	51.8					-41.1	
						-42.8	
			SAND: pale brownish grey, wet, medium dense, well graded, mostly angular, fine to coarse grained calcitic with some fine, subrounded quartzose		13	SPT	5 9 7
-47.8	58.5					-47.8	
			Sandy GRAVEL: pale brownish grey, wet, medium dense, well graded, fine grained, angular with quartzose and calcitic sand as above		14	SPT	4 6 8
						-52.8	
					15	SPT, Hard drilling from 64.5 to 67 ft	13 18 50/2"
-53.8	64.5		SAND: pale greenish grey, wet, very dense, well graded, subequal parts of fine, subrounded, quartzose and fine to coarse, angular, calcitic sand				
-58.0	68.7					-57.8	
			Only angular fragments of sandy LIMESTONE recovered		16	SPT; Hard drilling from 68.7 to 72.5 ft	50/3"

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0271

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Hole No. CP05-EAARS-CB-0271

DRILLING LOG (Cont Sheet) | Elevation Top of Hole: 10.7 | Sheet 5 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-59.5	70.2					-59.5	
-61.8	72.5		SAND: olive grey, wet, loose, uniform, fine grained, subrounded, quartzose, trace silt			-62.8	
					17	SPT	2 3 6
			SAND: as above but no silt and a trace fine to coarse grained, angular, calcitic sand			-67.8	
					18	SPT	3 3 5
			SAND: as above but with more (some) angular, fine to coarse grained, calcitic sand, trace silt and medium dense			-72.8	
					19	SPT; Ochopee Limestone	7 5 8
						-77.8	

Depth scale: 72, 74, 76, 78, 80, 82, 84, 86, 88

(continued)

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PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0271

370

Hole No. CP05-EAARS-CB-0271

DRILLING LOG (Cont.Sheet) Elevation Top of Hole: 10.7 Sheet 6 of 5 Sheets

Project: EAA Reservoir A-1 Installation

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-77.9	88.6					-77.9	
			SAND: greenish grey, wet, dense, well graded, subequal parts, angular, fine to coarse grained, calcitic and fine grained, subrounded quartzose		20	SPT	11 16 15
						-82.8	
			SAND: as above but medium dense and trace fine, angular, calcitic gravel		21	SPT	11 11 13
						-87.8	
			SAND: as above but dense and no fine gravel		22	SPT	18 21 20
-89.3	100.0						
			End of Boring at 100'			NOTES: 1. Soils are field visually classified in accordance with the ASTM Designation: D 2488-93 2. 140# hammer with 30" drop used on 2.0' splitspoon (1 3/8" I.D. x 2" O.D.)	

Depth scale: 90, 92, 94, 96, 98, 100, 102, 104, 106

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PROJECT: EAA Reservoir A-1 HOLE NUMBER: CP05-EAARS-CB-0271

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Hole No. CP05-EAARS-CB-0272

DRILLING LOG	Division:	Installation: Sheet 1 of 5 Sheets
1. Project: EAA Reservoir A-1		10. Size and type of bit: 3" bit, Rotary Method
2. Location: N750226.1, E765882 - NAD 1983		11. Datum for Elevation Shown: NAVD 1988
3. Drilling Agency: Nodarse & Associates, Inc.		12. Manufacturer's Designation for Drill: Diedrich D-50
4. Hole No: CP05-EAARS-CB-0272		13. Total Number of Overburden Samples Taken: N/A
5. Name of Driller: Erik Bluemke		14. Total Number of Core Boxes: 1
6. Direction of Hole: [X] Vertical [ ] Inclined		15. Elevation Ground Water: Not measured
		16. Date Hole Started 7/6/2005 Completed 7/7/2005
7. Thickness of Burden: N/A		17. Elevation Top of Hole: 8.7 (ft)
8. Thickness of cap rock: N/A		18. Total Core Recovery for hole: N/A
9. Depth of hole: 100 ft		19. Inspector: N. Holst

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
8.7	0.0						
8.5	0.2		Peat: 2 inches			8.7	50/2"
			LIMESTONE: caprock, tan to light brown, mostly fine grained, fossiliferous, vuggy, strong and hard to soft, weak and porous		1	7.7 SPT	
				46 (RQD 14%)	1	HQ coring, UCS=2650psi	
3.7	5.0		Gravelly SAND: pale brownish grey, very dense, wet angular, well graded, fine to coarse grained, calcitic, trace silt		2	3.7 SPT, SM, Silty sand with gravel, Moisture=18%	6 / 11 / 50/2"
1.2	7.5		Sandy Silty GRAVEL: as above but very dense and mostly fine, calcitic gravel		3	1.2 SPT	50
-1.3	10.0		SAND: as above but less dense (medium) with some silt and fine gravel		4	-1.3 SPT, SM, Silty sand with gravel, Moisture=29%	8 / 8 / 6
-4.8	13.5		Only a few angular fragments of LIMESTONE recovered		5	-4.8 SPT; Hard drilling to 17.5 ft	50/1"

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14

PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0272

372

Hole No. CP05-EAARS-CB-0272

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.7 | Sheet 2 of 6 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-6.3	15.0					-6.3	
-8.8	17.5		Gravelly SAND: pale brownish grey, dense, wet, uniform, fine grained, mostly subrounded and quartzose, some fine to coarse, angular, calcitic sand, angular, calcitic gravel			-9.8	
					6	SPT; SW-SM; Well graded sand with silt+gravel; Moisture=11%	26 26 14
-14.8	23.5		Sandy GRAVEL: pale brownish grey, medium dense, fine, angular limestone gravel with fine, subrounded, uniform, quartzose sand		7	-14.8 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=15%; Intermittent hard drilling	6 10 10
-19.8	28.5		SAND: pale brownish grey, medium dense, wet, uniform, fine grained, subrounded quartzose, trace fine to medium, angular, calcitic sand		8	-19.8 SPT; SP; Poorly graded sand; Moisture=29%	10 14 13

Depth scale: 16, 18, 20, 22, 24, 26, 28, 30, 32

(continued)

ENG FORM 1836

PROJECT: EAA Reservoir A-1 | HOLE NUMBER: CP05-EAARS-CB-0272

Hole No. CP05-EAARS-CB-0272

DRILLING LOG (Cont.Sheet)	Elevation Top of Hole: 8.7	Sheet 3 of 6 Sheets
Project: EAA Reservoir A-1	Installation	

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-24.7	33.4					-24.7	
-24.8	33.5		Sandy GRAVEL: like that at 23.5 ft but loose		9	-24.8 SPT; SW-SM; Well graded sand with silt+gravel; Moisture=16%	7 5 4
-29.8	38.5		SAND: like that at 28.5 ft but loose with a trace fine gravel		10	-29.8 SPT	4 4 3
-33.8	42.5		Sandy GRAVEL: like that at 33.5 ft but pale greenish grey		11	-34.8 SPT; Hard drilling from 42.5 to 43.5 ft	13 6 5
-38.8	47.5		GRAVEL: pale greenish grey, wet, medium dense, well graded, fine grained, angular, limestone gravel with some fine quartzose sand, trace silt		12	-39.8 SPT; Hard drilling from 47.5 to 49 ft; Loosing drilling mud; hole caving below 50 ft	26 13 12

Depth scale: 34, 36, 38, 40, 42, 44, 46, 48, 50

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PROJECT	HOLE NUMBER
EAA Reservoir A-1	CP05-EAARS-CB-0272

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Hole No. CP05-EAARS-CB-0272

DRILLING LOG (Cont.Sheet) | Elevation Top of Hole: 8.7 | Sheet 4 of 5 Sheets

Project: EAA Reservoir A-1 | Installation

ELEV (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ 0.5'
-43.1	51.8					-43.1	
-43.3	52.0		Sandy GRAVEL: like that at 23.5 ft				
						-44.8	
					13	SPT; Hard drilling from 50.5 to 52 ft	6 9 10
-49.8	58.5		Silty SAND: olive grey, loose, wet, mostly uniform, fine subrounded, some calcitic, angular, fine sand to fine gravel, shell fragments			-49.8	
					14	SPT; SP-SM; Poorly graded SAND with silt; Moisture=21%	5 5 5
-54.8	63.5		SAND: like that above but less (trace) silt			-54.8	
					15	SPT; 5" Cased hole to 65 ft	4 3 4
						-59.8	
			SAND: as above, no silt, pale greenish grey		16	SPT	10 14 14

Depth scale: 52, 54, 56, 58, 60, 62, 64, 66, 68, 70

(continued)

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PROJECT EAA Reservoir A-1 | HOLE NUMBER CP05-EAARS-CB-0272